THEATRE CATALOG

9th
ANNUAL
ALL NEW
EDITION

1950-51

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EDITORIAL FOREWORD

As this 9th Annual Edition of THEATRE CATALOG goes to press, the theatre industry faces a future that is clouded with confusion and uncertainty. Only one fact stands out clearly and distinctly on this nebulous horizon. Although there has been no specific declaration of hostilities, and there is a continuing paradoxical tendency of many in high places to refer to the Korean fighting as a mere "police action," the nation is at war, and the theatre industry along with it.

The first official indication that the industry, as a vital segment of the national economy, would have to mobilize for defense came on October 16, 1950, when the National Production Authority issued its Order M-4, limiting the amount which may be spent for theatre construction and remodeling to $5,000, in order to conserve a tightening supply of materials needed for the mobilization program. In addition, certain restrictions have already been placed on materials needed for the production of theatre equipment, and there is every indication that further curbs may be imposed in the future.

It is impossible, however, to prophesy exactly what the months ahead will bring. Judging from the befuddled state of affairs in Washington at present, it would seem that the helmsmen who are attempting to guide the Ship of State know no more than the average citizen as to just where the zig-zag course on which it is sailing is taking us.

The theatre industry for one had good cause to wonder recently when, in connection with the aforementioned $5,000 restriction (intended to apply to real property only), the NPA issued directives changing the traditional classification of such items as theatre chairs and water coolers from personal to real property, thereby bringing them within the above ceiling and virtually putting some manufacturers out of business.

Fortunately, due to the protests which naturally resulted, the NPA rescinded these orders, but, since more bureaucratic errors of this nature may take place, it is incumbent upon the industry to safeguard its best interests through such organizations as TOA, ALLIED, and TESMA. The industry would be glad to make the same sacrifices that it did during World War II, but it cannot afford to stand idly by while its security is undermined.

Under these trying circumstances, the best that any publication can hope to do is to devote the bulk of its editorial content to whatever trends have been and are taking place while endeavoring to present additional subject matter that will be helpful to the reader in understanding and adapting himself to developments which may take place in the foreseeable future. This precept has been used by the Editors in the compilation of material for this 9th Annual Edition of THEATRE CATALOG, and it is hoped that the customary keen attention paid to design, construction, maintenance, management, equipment, etc., in the following pages will match the high standards of service to the industry which the preceding eight editions have established.

Inasmuch as the problem of declining boxoffice receipts is the most pressing one confronting the industry today, a keen analysis of the situation entitled "What's Wrong with our Theatres?" is given the feature spot in this volume. Devoted primarily to the role of the physical theatre building in attracting patrons, it is well worth the thoughtful attention of every industryite.

The usual pictorial reviews of the best construction of the previous year—both roofed theatres and drive-ins—continue with 37 of the former and 20 of the latter accorded liberal illustrated treatment. Incidentally, many of these theatres will also be awarded the Annual Merit Award plaque, bestowed last year for the first time by the Editors of THEATRE CATALOG and the PHYSICAL THEATRE Department of its sister publication EXHIBITOR on the best of the outstanding new theatres reviewed in the 8th Annual Edition.

Drive-ins, whose importance in the industry looms larger and larger with each passing year, are again granted extensive space in this 1950-51 Edition. A detailed listing of the 2,703 that will serve the 1951 season (P. 137 to P. 168) shows an increase of 950 over the 1,753 in operation during the 1950 season. The "Second Annual Drive-In Audience Survey" (P. 128 to P. 136) provides some interesting facts about the entertainment habits of the American families who patronize these outdoor theatres.

Other surveys in this volume, such as "Cinerama: A New Era in Film Entertainment?" (P. 321 to P. 323) and "Bowling Alley Operation with Theatres" (P. 434 to P. 440), typify a Table of Contents designed to furnish the owners and operators of the world's theatres with the most up-to-date information available on pertinent matters of interest.

1950-51

TABLE of CONTENTS

Editorial Surveys •

FRONTISPIECE I

EDITORIAL FOREWORD III

TABLE OF CONTENTS IV

AUTHORS AND CONTRIBUTORS VI

ADVERTISERS VII

EDITORIAL FEATURE: WHAT'S WRONG WITH OUR THEATRES? ..... *Fred C. Matthews* XI

BOOK ONE:

DESIGN AND CONSTRUCTION

Design

SOME TECHNIQUES FOR THEATRE LIGHTING ..... *Robert T. Dorsey* 2

A Few Treatments for Line and Form Are Presented To Indicate the Versatility of Lighting in Design

INTERIOR DESIGN AND COLOR COORDINATION 5

Case Examples Are Used To Show How A Decorative Scheme May Combine the Functional and Esthetic

BEHAVIOR OF ACOUSTIC MATERIALS.... *Richard K. Cook* 12

A Review of Popular Sound-Absorbent Substances And Factors To Be Considered In Their Selection

1950-51 REVIEW OF NEW THEATRE CONSTRUCTION 16

A Pictorial Coverage of the Design and Structural Trends in Recently Opened, Award-Winning Theatres

CARIB, Miami Beach, Fla. 17
NORTHWOOD, Baltimore, Md. 21
CAPITAN, Pasadena, Texas 24
WATTS, Osage, Iowa 26
WESTOVER, Richmond, Va. 28
STATE, Cuyahoga Falls, Ohio 30
TEXAS, Kingsville, Texas 32
MERBEN, Philadelphia, Pa. 34
GUYAN, Logan, W. Va. 37
HAVEN, Brookhaven, Miss. 40
EL RANCHO, Victorville, Calif. 42
GARMAR, Montebello, Calif. 44
TUSCUMBIAN, Tuscumbia, Ala. 46
SHORE, Huntington, L. I., N. Y. 48
BEACH, Cape May, N. J. 51
HOLIDAY, Park Forest, Ill. 54
PLAZA, Washington, D. C. 56
PARAMOUNT, Lethbridge, Alberta, Canada 58
BROOK, Brooklyn, N. Y. 60
FISKE, Oak Grove, La. 62
FOX, Missoula, Montana 64
CREST, Great Bend, Kansas 66
PARADISE, Los Angeles, Calif. 69
PARK, Park Falls, Wis. 72
RAPIDS, Eaton Rapids, Mich. 74
HILAND, Albuquerque, N. M. 76
NEW MAYFAIR, Philadelphia, Pa. 78
ALEX, Alexandria, Ind. 79
MARS, Mars, Pa. 80
REULE, Medina, N. D. 81
SPARTA, Sparta, N. J. 82
ZOE, Pittsfield, Ill. 83
REGENT, Algiers, Algeria 84
CAPITOLE, Beyrouth, Lebanon 85
CHAPULTEPEC, Mexico, D. F. 86
NACIONALE, Mexico, D. F. 87
STAR, Cebu, Philippine Islands 88

THE LAMELLA TIMBER ROOF 89

The Natural Merits of Wood are Complemented by Safety and Eye-Appeal Thru Interlaced Timbers

OVERHEAD STAGE STRUCTURE REQUIREMENTS ..... *C. E. Tompkins* 94

An Expert Analysis of Correct Gridiron Design From the Operational and Serviceability Angles

HOSPITAL THEATRE CATERS TO COMFORT 99

Unique Seating Plan and Graduated Floor Provide Ample Leg Room and Clear View for Disabled Cases

A MODERN ALL-NEGRO THEATRE 102

Facilities of Highest Order Are Provided in Newly Opened New Orleans House for Colored Patrons Only

Construction and Materials

A DETAILED STUDY OF CONCRETE FLOORS 106

The Basic Ideal Type of Surface for Theatres and Its Kin, Such as Terrazzo, Are Treated at Length

HOW TO KEEP WALLS AND FLOORS DRY 117

Special Waterproofing Compounds for Masonry and Cement Prevent Entry of Moisture

FIRE-SAFE FIBERGLAS BOARD AND TILE ..... *Willis M. Rees* 120

New Incombustible Material Answers the Need for Deadening Sound in All Parts of Theatre

THE POTENTIAL USES OF MONASTRAL PIGMENTS 124

The Fastness and Durability of the Colors of Value in Construction and Maintenance

Drive-In Theatres

SECOND ANNUAL DRIVE-IN AUDIENCE SURVEY ..... *Dr. Rodney F. Luther* 128

Detailed Poll of Typical Metropolitan Area Group Reveals Basic Traits of All Outdoor Theatre-goers

MORE ABOUT DRIVE-IN DEPRECIATION 135

Government Takes First Step in Drawing Up of Fair Schedules Anxiously Awaited by Drive-In Operators

DRIVE-IN THEATRES OF THE 1951 SEASON 137

A Breakdown by Territories and States of Their Locations, Capacities, Ownerships, and Policies

SEPTIC TANK SYSTEMS FOR DRIVE-INS ..... *George M. Petersen* 169

The Functional Requirements for an Ideal Type of Sewage Disposal Are Studied With Recommendations

THE MARTIN PREFAB DRIVE-IN PLAN.....*C. L. Patrick* 174

How a Southern Circuit Produced and Constructed an Amazing Total of 20 Complete Units in a Few Months

THE FOUR-SCREEN DRIVE-IN PLAN 178
Construction Economies and More Flexible Operation Afforded Under an Ingenious Quadruple Arrangement

A MOBILE OUTDOOR THEATRE CIRCUIT 181
Portable Power Units Supply All of the Operating Requirements of Three Theatres in Minnesota Woods

1950-51 REVIEW OF NEW DRIVE-IN CONSTRUCTION 184
A Pictorial Survey of Design and Other Features Apparent in New Drive-Ins Which Opened Recently
TWIN, Louisville, Ky. 185
ATLANTIC, Pleasantville, N. J. 188
COWTOWN, Ft. Worth, Texas 190
RIVERVIEW, Carrollton, Ky. 192
LITTLE DIXIE AIRWAY, Mexico, Mo. 194
KENO FAMILY, Kenosha, Wisc. 196
PYRAMID, Beaumont, Texas 198
SEQUOIA, Visalia, Calif. 200
EATONTOWN, Eatontown, N. J. 202
CARO, Caro, Mich. 204
GENEVA, San Francisco, Calif. 206
CENTRALIA, Centralia, Ill. 208
TERRYTIME, Woodward, Okla. 210
LOST RIVER, Bowling Green, Ky. 212
SUNSET, Woodland, Calif. 214
HILLCREST, Canton, Ill. 216
COLONIAL, Madison, Tenn. 217
JEFFERSON, Dallas, Texas 218
COLONIAL, Thibodaux, La. 219
FAMILY, Espy, Pa. 220

THE UNUSUAL FLY-IN DRIVE-IN 221
The Air Age Overtakes the Outdoor Theatre With Special Provisions for Flying Patrons

STATION SYSTEM REFRESHMENT VENDING
Charles B. Blood 223
The General Operating Essentials of a Widely Used Selling Method Are Discussed With a Specific Case

CAFETERIA SYSTEMS FOR DRIVE-INS.....*Philip L. Lowe* 226
Notable Speed-Up in Refreshment Sales Effected With Less Help Required and Better Cash Control

RECREATION AREAS IN OUTDOOR THEATRES 233
Simple Playgrounds and Miniature Amusement Parks Are Studied in Regard to Equipment and Operation

AN AUTOMATIC TRAFFIC CONTROL SYSTEM 238
A Unique Electric Signaling Device Clearly Shows Empty Speaker Stations on Board at Each Ramp Head

MORE ABOUT INSURANCE FOR DRIVE-INS
M. Monroe Fass and E. W. Collins 240
Additional Light Is Shed on the Problems Involved In Seeking Proper Coverage for Many Contingencies

INCIDENTAL EQUIPMENT AND SUPPLIES
Albert Bernstein 242
A Detailed List of Small, but Important, Items Essential to Smooth Drive-In Theatre Operation

BOOK TWO:

EQUIPMENT

Front and Lobby

FLOODLIGHTING THE THEATRE FACADE....*H. E. Mahan* 254
A Pointed Discussion of How the Sorely Neglected Exterior May Be Set to Glowing as a Sales Factor

AN EFFICIENT CROWD CONTROL SYSTEM.....*W. H. Lee* 258
Patrons Leaving City Line Center, Philadelphia Exit Through Interior Rather Than Foyer Standees

THE ROLE OF RUBBER MATS IN THEATRES
D. W. Moor, Jr. 260
Several Types of These Protective Floor Coverings Are Studied With Regard to Their Functional Worth

Interior and Auditorium

SELECTING UPHOLSTERY FABRICS FOR CHAIRS
Marinus Westrate 276
Criteria Used in Choosing Materials and Tests Performed to Determine Fulfillment Are Studied

PUBLIC SERVICE OF THE WATER COOLER
Francis E. Moquin 280
An Indispensable Aid in the Creation of Goodwill Is Considered From a Sound Functional Viewpoint

STRUCTURAL CONSIDERATIONS FOR THEATRE PLUMBING 283
Installation of the Following Facilities Should Conform with Codes and Standard Practices

POINTERS TO INSURE LONG CARPET WEAR
Merrill A. Watson 285
Construction, Underlining, and Installation Are Treated in Their Close Relationship to Use Life

Projection and Sound

CHOOSING THE PROPER TYPE AND SIZE ARC
W. W. Lozier and E. R. Geib 318
Recent Developments in the Science of Projection Are Analysed With an Eye to Specific Applications

CINERAMA: A NEW ERA IN FILM ENTERTAINMENT?... 321
Dramatic Process Brings True Reality to Screens With Three-Dimensional Picture and Sound System

Heating, Ventilating and Air Conditioning

EVAPORATIVE COOLING FOR THEATRES 346
A Simple and Inexpensive Air Conditioning Method Proves Suitable for Operation in Many Localities

PREVENTING CORROSION IN AIR-CONDITIONING SYSTEM .....*W. J. Ryan* 351
Chemical Compounds for Warding Off or Reducing Destructive Formations Are Helpfully Analysed

MAINTENANCE OF THE AIR-CONDITIONING PLANT 353
Practical Tips on Good Housekeeping for Trouble-Free Operation and Maximum Equipment Life

New Products, Supplies, and Supply Dealers

NEW INTRODUCTIONS DURING 1950 360
Brief Thumbnail Descriptions of Selected Products With Interesting Possibilities

SUPPLY DEALERS OF THE UNITED STATES 367
Comprehensive Listing of Names, Addresses, Personnel, Products, and the Areas Served

SUPPLY DEALERS OF THE DOMINION OF CANADA 380
Comprehensive Listing of Names, Addresses, Personnel, Products, and the Areas Served

SUPPLY DEALERS OF THE REST OF THE WORLD 382
Comprehensive Listing of Names, Addresses, Personnel, Products, and the Areas Served

REVIEW OF PAINTS, VARNISHES, AND LACQUERS 391
Resume of Properties and Uses of Coatings; Special Materials and Future Possibilities

BOOK THREE:

MANAGEMENT

Methods, Practices and Maintenance

SUGGESTIONS FOR THEFT PROTECTION
Howard W. Nugent 414
Steps a Theatreman Can Take to Guard Against Loss Along With a Private Organization Are Summarized

REOPENING THE DRIVE-IN
Paul Petersen and E. O. Wilschke 417
Two Experts on Peeling Off a Winter Cocoon at the Start of a New Season Review the Necessary Steps

PROPER HANDLING OF THEATRE SUPPLIES 422
An Efficient System for Ordering, Storing, and Issuing Housekeeping Items Is Explained Herein

EFFECTIVE PEST CONTROL IN THEATRES
Jacques J. Hess 425
The Various Kinds of Troublemakers Are Discussed With Appropriate Remedial Treatments Prescribed

Extra Profits

BOWLING ALLEY OPERATION WITH THEATRES
Nat N. Wexler 434
How a Mutually Profitable Alliance May Be Formed Between Two Enterprises Which Support One Another

Television and 16 mm. Film

THE GPL THEATRE TELEVISION SYSTEM 446
Video Images Are Recorded and Projected With Far Better Definition by New Film Intermediate Method

A THEATRE TELEVISION TRAINING PROGRAM 450
Both Residential and Home-Study Courses Offer Theatremen Thorough Grounding in Video Techniques

Indexes

COMPLETE SUBJECT INDEX TO 1950-51 EDITION 456
The Entire Editorial Material Is Indexed and Cross-Indexed for Easy Reference Use

CUMULATIVE INDEX TO ALL PREVIOUS EDITIONS 459
Topical References to All Articles Published in Prior Volumes of THEATRE CATALOG

Authors and Contributors •

A

ADLEMAN, RALPH P. 80
Mars Theatres, Inc., Mars, Pa.
AHRENS MANUFACTURING COMPANY 233
Grinnell, Iowa
ALARIE, A. H. 434
Empire Theatre, Bay City, Mich.
ALEXANDER SMITH AND SONS CARPET CO. 285
New York, N. Y.
ALLAN HERSCHELL COMPANY, INC. 233
North Tonawanda, N. Y.
ALLEN, VICTOR H. 12
Editor, Journal of the S.M.P.T.E., New York, N. Y.
AMERICAN CONCRETE INSTITUTE 391
Detroit, Michigan
AMERICAN PLAYGROUND DEVICE COMPANY 233
Anderson, Indiana
AMERICAN SOCIETY OF INTERIOR DESIGN 5
New York, N. Y.
AMERICAN SOCIETY OF TESTING MATERIALS 391
Philadelphia, Pa.
ARDELL, BARCLAY W. 44, 45
B. F. Shearer Company, Los Angeles, Calif.
ARMFIELD, RICHARD 446
Burke Dowling Adams, Inc., Montclair, N. J.

B

BASS, BELA 88
S. M. Berger & Company, Inc., Manila, Philippines
BELL, JOSEPH N. 106
Acting Manager, Public Relations Bureau, Portland Cement Association, Chicago, Ill.
BERNSTEIN, ALBERT 242
Managing Director, Bellwood Drive-In, Bellwood, Va.
BLANKENSTEIN, C. N. 58, 59
Green, Blankenstein, Russell and Associates, Architects-Engineers, Winnipeg, Manitoba, Canada
BLONG, HOWARD 434
Proprietor, Oriental Lanes, Milwaukee, Wisc.
BLOOD, CHARLES B. 223
Star Manufacturing Company, St. Louis, Mo.
BOLLER, ROBERT 66, 67, 68
Boller and Lusk Associates, Architects, Kansas City, Mo.
BROWN, E. I., JR. 221
Airport Drive-In Theatre, Inc., Farmingdale, N. J.
BUDINA, A. O. 28, 29
Architect, Richmond, Va.
BURKE, J. E. COMPANY 233
Fond Du Lac, Wisc.
BUTLER, HOMER S., JR. 208, 209
Centralia, Ill.

C

CARROLL, ARMAND 34, 35, 36
Architect, Philadelphia, Pa.
CHICOPEE MANUFACTURING CORP. 276
New York, N. Y.
COLLINS, E. W. 240
Insurance Manager, Fass and Wolper, Inc., New York, N. Y.
CONNER, JOHN D. 422
Pulaski Theatre Corp., Pulaski, Va.
COOK, RICHARD K. 12
Chief, Sound Section, National Bureau of Standards, Washington, D. C.
CORGAN, JACK 32, 33, 102, 218
Architect, Dallas, Texas

D

DAVERMAN, DON 276
American Seating Co., Grand Rapids, Mich.
DEANGELIS, MICHAEL J. 17, 18, 19, 20
Architect, New York, N. Y.
DELL, TED 83
Pittsfield, Ill.
DORSEY, ROBERT T. 2
Engineering Div., Lamp Dept., General Electric Co., Nela Park, Cleveland, Ohio
DOWNING, L. E. (JACK) 40, 41
Brookhaven, Miss.
DUNN, WALTER E. 48, 49, 50, 60, 61
Century Theatres, New York, N. Y.
DUPONT, E. I. DENEMOURS AND COMPANY 124
Wilmington, Delaware

E

EBELING, GEORGE A. 30, 31
Architect, Cleveland, Ohio
ELDEAN, FRED, ORGANIZATION, INC. 285
New York, N. Y.
ESSANESS THEATRES CORP. 178
Chicago, Ill.
ESTERL, JAMES 72, 73
Esterl Amusement Company, Park Falls, Wisc.

F

FASS, M. MONROE 240
President, Fass and Wolper, Inc., New York, N. Y.
FISKE, DONALD B. 62, 63
Oak Grove, La.
FLINTKOTE COMPANY, INC. 117
New York, N. Y.
FLOERSHEIMER, AL, JR. 188, 189, 202, 203, 417
Director of Advertising and Publicity, Walter Reade Theatres, New York, N. Y.
FOWLER, F. L. 82
St. Cloud Theatres, Washington, N. J.
FREDERICKS, JOHN R. 200, 201
Westland Theatres, Visalia, Calif.
FROEHLICH, ARTHUR 69, 70, 71
Architect, Beverly Hills, Calif.
FURMAN, JOSEPH J. 82
Architect, New York, N. Y.

G

GEIB, E. F. 318
National Carbon Div., Union Carbide and Carbon Corp., New York, N. Y.
GENERAL PRECISION LABORATORY, INC. 446
Pleasantville, N. Y.
GLATZ, M. C. 64, 65
Fox Inter-Mountain Amusement Corp., Denver, Colo.
GRANT, JOE 21, 22, 23
Baltimore, Md.

H

HANSON, L. P. 346
Vice President, Charge of Sales, U. S. Air Conditioning Corp., Minneapolis, Minn.
HART, JOE 217
Madison, Tenn.
HARTGROVE, ROBERT 190, 191
Dallas, Texas
HESS, JACQUES J. 425
Vice President, Exterminating Services Corp., New York, N. Y.
HICKS, J. L. 40, 41
Hubert Mitchell Industries, Hartselle, Ala.
HILL'S PLAYGROUND EQUIPMENT CO. 233
Grand Prairie, Texas
HOLTZ, G. R. 346
Farr Company, Los Angeles, Calif.
HUGHES, TALMAGE C. 74, 75
Architect, Detroit, Mich.

I

INSUL-MASTIC CORP. OF AMERICA 117
Pittsburgh, Pa.

J

JOHNSON, A. S. 74, 75
Birmingham, Mich.

K

KAMSKY, DAVID 422
Neighborhood Theatres, Inc., Richmond, Va.
KEESLING, E. L. 37, 38, 39
Newbold-Keesling Circuit, Bramwell, W. Va.
KILEY, WALTER L. 99
Commander, USNR, District Public Information Officer, 9th Naval District, Great Lakes, Ill.
KING AMUSEMENT COMPANY 233
Mount Clemens, Mich.
KLEIMAN, MAURICE 198, 199
Lake Charles, La.
KUHLMAN, E. L. 66, 67, 68
Commonwealth Theatres, Inc., Great Bend, Kansas

L

LAZARUS, ISADORE I. 102
Henry Lazarus Theatres, Inc., New Orleans, La.
LEE, S. CHARLES 44, 45, 89
Architect, Los Angeles, Calif.
LEE, W. H. 51, 52, 53, 258
Architect, Philadelphia, Pa.
LOVE, L. C. 280
General Sales Manager, Ebco Manufacturing Co., Columbus, Ohio
LOWE, PHILIP L. 226
Theatre Candy Co., Inc., Boston, Mass.
LOZIER, W. W. 318
National Carbon Div., Union Carbide and Carbon Corp., New York, N. Y.
LUSK, DIETZ, JR. 66, 67, 68
Boller and Lusk Associates, Architects, Kansas City, Mo.
LUTHER, DR. RODNEY F. 128
Film Merchandising Consultant and Associate Professor of Marketing, Los Angeles State College, Los Angeles, Calif.

M

MAHAN, H. E. 254
Manager, Illuminating Laboratory, Apparatus Division, General Electric Co., West Lynn, Mass.

MARSH WALL PRODUCTS, INC. 117
Dover, Ohio
MATTHEWS, FRED C. XI
Vice President, Motiograph, Inc., Chicago, Ill.
MATTINGLY, J. RAYMOND 185, 186, 187, 192, 193, 212, 213
Falls City Theatre Equipment Co., Louisville, Ky.
MILLS, GEORGE E. 280
Public Relations Director, Refrigeration Equipment Manufacturers Association, Washington, D. C.
MINIATURE TRAIN COMPANY 233
Rensselaer, Ind.
MOHAWK CARPET MILLS, INC. 285
Amsterdam, N. Y.
MOQUIN, FRANCIS E. 280
Refrigeration Specialities Dept., Westinghouse Electric Corp., Springfield, Mass.
MOOR, D. W., JR. 260
President, American Mat Corp., Toledo, Ohio
MYERS, FRANCIS J. 135
Ex-Senator, U. S. Senate, Washington, D. C.

N

NATIONAL PAINT, VARNISH AND LACQUER ASSOCIATION 117, 391
Washington, D. C.
NATIONAL PEST CONTROL ASSOCIATION 425
New York, N. Y.
NEPOTE, JOSEPH 194, 195
Frisina Mexico Theatres Co., Mexico, Mo.
NORTMAN, HARRY R. 54, 55
Loebl, Schlossman and Bennett, Architects-Engineers, Chicago, Ill.
NUGENT, HOWARD W. 414
Manager, Department of Criminal Investigation, Pinkerton's National Detective Agency, New York, N. Y.

O

OLLINGER, C. G. 318
Assistant Manager, Advertising and Sales Promotion Department, National Carbon Div., Union Carbide and Carbon Corp., New York, N. Y.
ONAN, D. W. AND SONS, INC. 181
Minneapolis, Minn.
OVERLAND AMUSEMENTS 233
Lexington, Mass.

P

PATRICK, C. L. 174
General Manager, Martin Theatres, Inc., Columbus, Ga.
PATTERSON, WAYNE 42, 43
Western Amusement Co., Inc., Los Angeles, Calif.
PECK, ROBERT C. 196, 197
Kenosha, Wisc.
PETERSEN, GEORGE M. 169
Drive-In Theatre Consultant and Designer, Cleveland, Ohio
PETERSEN, PAUL 417
Supervisor, Drive-In Operations, Walter Reade Theatres, New York, N. Y.
POPULAR SCIENCE MONTHLY 321
New York, N. Y.
PORTLAND CEMENT ASSOCIATION 106
Chicago, Illinois
PRAT, F. G., JR. 219
Vacherie, La.

R

REES, WILLIS M. 120
Acoustical Specialist, Owens-Corning Fibreglas Corp., Toledo, Ohio
REEVES, HAZARD E. 321
President, Reeves Soundcraft Corp., New York, N. Y.
REULE, NORMAN 81
Medina, N. D.
REYNOLDS, ALBERT H. 238
General Manager, Claude Ezell & Assoc. Theatre Circuit, Dallas, Texas
ROBINSON, W. A., JR. 450
DeForest's Training, Inc., Chicago, Illinois
RODICK, H. F. 346
National Engineering and Manufacturing Co., Kansas City, Mo.
ROHR, JOHN M. 181
Owner, Marlow Theatre, Pine River, Minn.
ROOF STRUCTURES, INC. 89
New York, N. Y.
ROSENBAUM, STANLEY 46, 47
Muscle Shoals Theatres, Florence, Ala.
ROSENFELDT, MORRIS L. 351
District Manager, Water Service Laboratories, Inc., Philadelphia, Pa.
ROTH, HARRY 56, 57
Washington, D. C.
RYAN, HOWARD 40, 41
Summit, Miss.
RYAN, W. J. 351
Technical Director, Water Service Laboratories, Inc., New York, N. Y.

S

SAINT LOUIS AMUSEMENT COMPANY 178
St. Louis, Mo.
SARBER, HARRY 214, 215
Designer, Oakland, Calif.
SCHOENEMAN, GEORGE J. 135
Commissioner of Internal Revenue, U. S. Treasury Department, Washington, D. C.
SCHRIEBER, MAX 69, 70, 71
Theatre Owner, Los Angeles, Calif.
SEIDMAN, BERNARD 21, 22, 23, 56, 57, 78
Paramount Decorating Company, Philadelphia, Pa.
SHACKLEFORD, A. W. 58, 59
Majestic Theatres Ltd., Lethbridge, Alberta, Canada
SHEPHERD, SONNY 17, 18, 19, 20
Wometco Theatres, Miami, Fla.
SMALLEY, D. E. 106
Editor, Floor Craft, Floorcraft Publishing Co., Brazil, Ind.
SMITH, RAYMOND F. 24, 25
Architect, Dallas, Texas
SPONGE RUBBER PRODUCTS COMPANY 285
Shelton, Conn.
STOCKBERGER, A. F. 216
Canton, Ill.
SUMMERBILL ROOF STRUCTURES 89
Los Angeles, Calif.

T

TATE, VINCENT M. 220
Theatre Equipment, Wilkes-Barre, Pa.
TERRY, D. V. 210, 211
Woodward, Okla.
THOMSEN, JAY 204, 205
Caro, Mich.
TOMPKINS, C. E. 94
President, J. R. Clancy, Inc., Syracuse, N. Y.
TUCKER, GEORGE L. 76, 77
Interstate Circuit, Inc., Albuquerque, N. M.

U

UNITED STATES RUBBER COMPANY 285
New York, N. Y.
UNITED STATES PUBLIC HEALTH SERVICE 169
Division of Sanitation, Municipal and Rural Branch, Washington, D. C.

W

WALWORTH, MEAD 84, 85, 86, 87
Westrex Corp., New York, N. Y.
WATSON, MERRILL A. 285
President, Carpet Institute, Inc., New York, N. Y.
WATTS, J. H. 26, 27
Osage, Iowa
WEILERT, R. S. 79
Alexandria, Ind.
WESTRATE, MARINUS 276
Research Department, American Seating Co., Grand Rapids, Mich.
WEXLER, NAT N. 434
The Brunswick-Balke-Collender Co., Chicago, Ill.
WILSCHKE, E. O. 417
Operating Manager, Altec Service Corp., New York, N. Y.
WILSON, LEWIS E. 178
Architect, Los Angeles, Calif.

Advertisers •

A

ABBOTT THEATRE EQUIPMENT CO. 370
ADLER SILHOUETTE LETTER CO. 270, 271
ALTEC SERVICE CORP. 428
ALEXANDER THEATRE SUPPLY, INC. 378
AMERICAN BLOWER CORP. 354, 355
AMERICAN MAT CORP. 274
AMERICAN PLAYGROUND DEVICE CO. 252
AMERICAN SEATING CO. 310
AMPRO CORP., THE 454
ASHCRAFT, C. S. MANUFACTURING CO. 339
ATLAS THEATRE SUPPLY CO. 378

B

BALDOR ELECTRIC CO. 333
BALLANTYNE, CO., THE 248
BAUSCH AND LOMB OPTICAL CO. 341
BERLO VENDING CO. 442
BEVELITE 272
BLUMBERG BROTHERS, INC. 377

Brady Movie Service 367
Brient, Elmer H., and Sons, Inc. 369

C

Capitol Theatre Supply Co. 372
Century Projector Corp. 328, 329
Chicopee Manufacturing Co. X
Cifre, Joe, Inc. 372
Clancy, J. R., Inc. 289
Cretors, C. and Co. 443

D

Dayton Safety Ladder Co. 407
Diecast Aluminum Speakers, Inc. 249
Drive-In Theatre Manufacturing Co., Inc. 244, 245
Dominion Sound Equipments Ltd. 381

E

Eastern Theatre Supply Co., Inc. 374
Electric-Aire Engineering Corp. 408
Exelite 340
Exhibitor 316

F

Falls City Theatre Equipment Co. 371
Federal Electric Products Co. 298
Filbert, John P., Co., Inc. 367
Forbes, Ernie, Theatre Supply 372
Frankel Associates 292

G

Gardner Theatre Service, Inc. 370
General Electric Co. (Lamp Div.) 409
General Electric Co. (Vacuum Cleaner) 308
General Precision Laboratories 453
General Radio Co. 297
General Register Corp. 406
General Theatre Supply Co., Ltd. 380
Girard Theatre Supply Co. 367
Goldberg Brothers 410
GoldE Manufacturing Co. 411

H

Hardin Theatre Supply Co. 379
Hertner Electric Co., The 334
Hewitt-Robbins, Inc. (Hewitt Rubber Div.) 314
Heywood-Wakefield Co. (Theatre Seating Div.) 311
Hornstein, Joe, Inc. (Miami) 369
Hornstein, Joe, Inc. (New York) 374

I

I. A. T. S. E. 430
Ideal Seating Co. 312
International Alliance of Theatrical Stage Employees and Moving Picture Machine Operators of the United States and Canada 430
International Projector Corp. 330, 331

K

Karagheusian, A and M, Inc. 307
Kliegl Brothers 315
Knoxville Scenic Studios 293
Koiled Kords, Inc. 251
Kollmorgen Optical Corp. 342
Kroehler Manufacturing Co. 313

L

Lorraine Carbons, Inc. 344

M

Maharam Fabrics 294
Manley, Inc. 441
Marsh Wall Products, Inc. 126
McAuley, J. E., Manufacturing Co. 338
Mid-West Theatre Supply Co., Inc. 376
Mitchell, Hubert, Industries, Inc. 295
Modern Theatre Equipment Co. 379
Mohawk Carpet Mills, Inc. 304, 305
Monarch Theatre Supply, Inc. 378
Mosaic Tile Company, The IX
Motiograph, Inc. 325, 326, 327

N

National Carbon Co., Inc. 343
National Screen Service Corp. 431
National Theatre Supply 246, 247, 272, 324, 330, 331 334, 340, 354, 355, 444, 453
National Theatre Supply Export 385
National Super Service Co., Inc. 309
Novelty Scenic Studios, Inc. 290, 291

O

Onan, D .W. and Sons, Inc. 302

P

Paramount Decorating Co. 296
Perey Turnstile Co., The 269

Q

Queen Feature Service, The 367

R

Radio Corp. of America (RCA International Div.) 387
RCA Service Co., Inc. 429
Reversible Collar Co. 412
Rilco Laminated Products, Inc. 125
Robin, J. E., Inc. 335

S

S.O.S. Cinema Supply Corp. 374
Sheldon Theatre Supply 376
Smith, Alexander, and Sons Carpet Co. 306
Southeastern Theatre Equipment Co. (Atlanta) 369
Southeastern Theatre Equipment Co. of Florida 369
Southeastern Theatre Equipment Co. of Louisiana 371
Southeastern Theatre Equipment Co. of North Carolina . 375
Sponge Rubber Products Co. 303
Standard Theatre Supply Co. 375
Strong Electric Corp., The 336, 337
Superior Electric Co., The 300

T

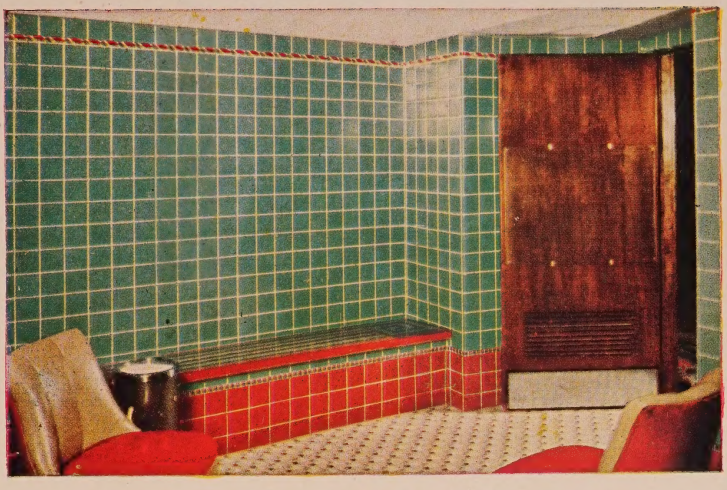
Tate, Vincent M., Theatre Equipment 377
Theatre Catalog 358
Theatre Catalog (Back Issues) 462, 463
Theatre Equipment Co. 250
Tri-State Theatre Supply 379
Trumbull Electric Manufacturing Co. 299

U

United States Air Conditioning Corp. 357
Universal Corp. 273

W

Wagner Sign Service, Inc. 263, 264, 265, 266, 267, 268
Walker Screen Co. 324
Ward Leonard Electric Co. 301
Wenzel Projector Co. 332
West Disinfectant Co. 432
Western Service and Supply, Inc. 368
Western Theatre Supply Co. 373
Westrex Corp. 389
Whitney Blake Co. 251
Wilkin Theatre Supply, Inc. (Atlanta) 370
Wilkin Theatre Supply, Inc. (Charlotte) 375



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WHAT'S WRONG... With Our Theatres?

By FRED C. MATTHEWS

What's wrong with the motion picture theatre business?

Plenty—if you listen to the tales of some of our exhibitors. Boxoffice has fallen off as much as fifty per cent—or even more. People have turned their backs upon the movies forever. Television has sounded the death knell of the motion picture industry.

Much of this wailing and groaning must be taken with more than the proverbial grain of salt. The recent Minnesota federal tax report is a case in point. Although most exhibitors in that state have been reporting that grosses in 1950 were below those for 1949, federal admission tax returns for November, 1950, showed an increase of more than one-third over the same month of the previous year. Maybe they do it with mirrors, or there's some logical explanation of the whole thing, but that's the way the figures read.

Another puzzling circumstance is that most localities outside the television areas make the same claims of decreased attendance and quote much the same percentages as do those in neighborhoods where television sets are in most homes. If this is really the case, and if some of our exhibitors are not exaggerating just a little bit, it would be a strong indication that television is not nearly as black a villain as it has been painted, and that we must make a serious search elsewhere for other causes.

As in most of the affairs of life, the truth will probably be found somewhere in between. The theatre business is not "going to the dogs," and any exhibitor who really believes that motion pictures are doomed should get out of an industry in which he has so little faith. Furthermore, if any theatre is really showing as huge a drop in attendance as some of them report, you may be certain that the answer does not lie in a general depression cycle in the motion picture industry or because of the competition of television, but rather in unskilled and shortsighted management.

Yet most of the complaints have a legitimate basis in fact. There has undoubtedly been a decline in boxoffice figures. It has not been felt to any appreciable degree in some theatres and in some localities, but in others it has reached truly alarming proportions. Like the Communist menace, it is here, and it would be disastrous for us to try to ignore it.

Another factor has entered the situation with the ban on new theatre construction ordered by the National Production Authority. This is not as bad, however, as it may seem at first glance. For one thing, any exhibitor who had serious intentions regarding new construction or modernization accumulated a surplus for that purpose during the lush war years, and has already completed the work or advanced it to such a stage that it is not affected by the ban.

"What we need today are good pictures produced to appeal to a wider range of population . . . better advertising, promotion, and programming of attractions, . . . clean, comfortable surroundings in an atmosphere of courtesy, . . . modern booth equipment so that pictures can be presented properly and to best advantage."

There is also an allowance up to $5,000 for alterations of buildings, such as repair and modernization work, and while this is not as large as it might be, you can still take care of most of the essentials with five thousand dollars. Most important of all, **as yet there is no restriction on theatre equipment and supplies**, such as projection and sound equipment, seating, carpets, and the like. So if an exhibitor is sincere about wanting to remedy his own troubles, there is plenty that he can do without sitting back and blaming it all on the Government.

Problem Facing Exhibitors

The immediate problem facing the theatre owner today may be resolved into three questions:

1. What is causing people to stay away from the theatres?
2. What can be done to bring them inside?
3. How can their comfort and entertainment be so increased that they will become steady patrons?

These are serious questions. Unless they are resolved satisfactorily, the entire future of the industry may be at stake. One thing is certain—the problem is never going to be settled by inaction. The exhibitor will have to do something about it, if he hopes to make a profitable business out of his theatre.

The Picture Product

The answer to the first of the three questions mentioned above—as to what is causing people to stay away from theatres—may be found in the picture product and in television.

There has been considerable improvement in the picture product over the avalanche of trash that was turned out during and immediately after the war, but there still is plenty of room for more improvement. The high quality of films being made by British, French, and Italian producers working with far smaller budgets presents a challenge which Hollywood should be quicker to recognize and analyze.

Certainly it requires no great intelligence to appreciate that the reason for the success of many of the top foreign pictures is that they were intended to appeal to the mature adult mind. As long as Hollywood continues to labor under the delusion that we are a nation of morons, its product will continue to appeal largely to the moronic fringe of the population.

We have all read numerous surveys showing that only from 10 to 20 per cent of the potential audience attends motion

picture theatres, and that consequently we have a vast untapped market from which to draw. If this is the case, do we need any better proof that our present crop of motion pictures is not appealing to the tastes and the understanding of the majority of the population?

The exhibitor, of course, does not make the pictures. There is nothing much that he can do except to continue, by all the means which lie within his power, to spread the light to the producers that their product has wandered far off the beam. No great industry can or should die in our present economy unless it brings about its own undoing.

It may be mentioned in passing, however, that there are a few things the exhibitor can do in the programming of his pictures. There is a common tendency to schedule the best attractions for the good weekend nights, and to fill up the rest of the week with the "cats and dogs." Here is one good reason in itself why more people do not go to the movies. If you had to stand in line for an hour or more in order to view a good movie, and could only see inferior productions on the nights when you could get in without difficulty, what do you think you would do?

There are and always will be seven days in the week, and we ought to try to make each day as profitable as possible. Wouldn't it be good business sense to strengthen the weak spots by siphoning off some of the surplus patronage from the weekends?

We also find theatres trying to book attractions at or about the same time as their competitors. Only a few films are so outstanding that there is a ready-made audience waiting and watching for their appearance.

Good pictures are profitable mainly because of word-of-mouth advertising, which is far more powerful in motion pictures than in most other industries. If all the theatres in a community play short runs of the same picture at about the same time, all of this word-of-mouth advertising goes to waste, because the many people who were unable to see the picture at that particular time or who only heard about it later will never be given another opportunity. Wouldn't it be wiser to stagger pictures so that one theatre might benefit from the other?

"The theatre front should sparkle with brilliant lighting and theatrical elegance" . . . and "flash more 'theatre' than any other building in town" . . . but "restrained and in good taste."

The exhibitor should also remember that there are potential patrons who are more interested in quality than in quantity. Whether he believes it or not, the truth is that there are many people who stay away from his theatre altogether because they don't agree with the double feature idea, especially when one half of the bill is invariably several degrees lower than mediocre. Much of this potential audience could be captured if the schedule was interspersed with one or two shows with the real feature only, or if scheduling was so arranged that people could come and see the good picture at convenient hours, and get out before the "stinker."

Television

Now we come to that "ol' debbil" television.

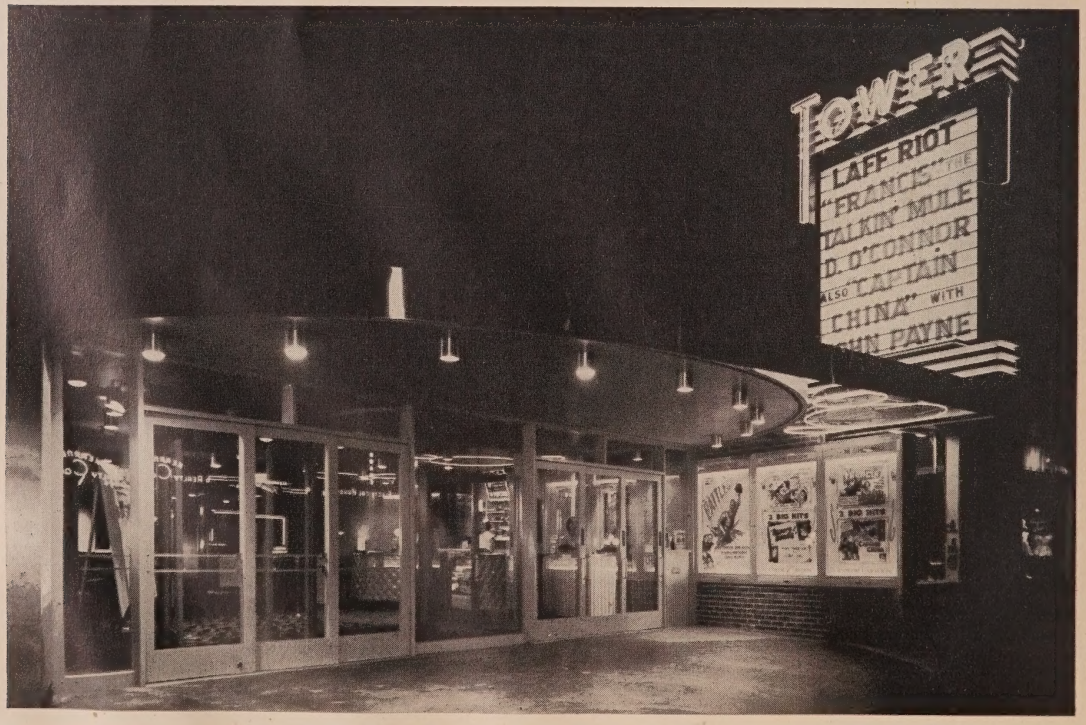
It is no small wonder that the exhibitor is running around in circles when it comes to television. From one side he is told that television is his greatest enemy and a menace to his livelihood—from the other that the whole trouble is due to the fact that motion pictures have been too slow to embrace and exploit television. One group tells him that theatre television will be his ruination—another that it will be his salvation.

The truth of the matter is that no one knows as yet. We are going through a temporary stage of adjustment between motion pictures and television. If we keep our heads and a good sense of business direction, motion pictures are going to come out all right.

In considering the effects of television upon motion picture attendance, we must weigh the three aspects of home television, theatre television, and color television.

Home Television — It is our opinion that if the exhibitor would spend two or three days viewing as many television

• LIGHT AT ITS SPARKLING BEST ON THE EXTERIOR OF THE TOWER, DENVER, DRAMATIZES THE SIGN, POSTER CASES, AND LOBBY.



programs as possible, he would cease worrying about television putting him out of business. Some of our movies and radio programs are pretty bad, but television comes in for its full share of the "corn" crop.

There is no question but that the family which buys its first television set will not be found at the theatre for at least several weeks. We doubt, however, that there are many people who can take television as a steady and unadulterated diet. Sooner or later they will begin to read about the latest motion pictures, or their friends will tell them about them, and as the novelty of television wears off, life will begin to resume its normal pattern.

Furthermore, we do not believe that the average person will long be contented sitting in his living room night after night. Half of the fun of going to the movies lies in getting dressed up, in mingling with and viewing other people, in participating in the audience reaction to the picture on the screen. The jokes which fall flat in the silence of the living room become uproariously funny when you have a theatre full of people howling in mirth.

Before long home television and motion pictures will adjust themselves to each other. Families will stay at home on certain nights in order to watch certain good television programs—and some of them are very good. They will go to the theatre if they are interested in the attractions which are playing, if they find the theatre a cheerful and pleasant place in which to spend an evening, and if they are made comfortable while they are watching the performance.

Theatre Television—Somehow or other, we just aren't able to figure out where theatre television is going to fit into the picture. This statement is made in spite of the real or artificial enthusiasm which has been generated for it in some quarters, and with no thought of the present technical limitations.

In the first place, television projection equipment is extremely expensive—about five times that of motion picture sound and projection equipment. Improved design and increased production can be counted upon to lower these costs, but the price will always be a formidable figure.

"Once you get men and women to step inside your theatre, even if it is for some other purpose, you will have an opportunity to show them what comfortable surroundings you have to offer and what a friendly person you are."

Complete sound and projection equipment operating 365 days per year for a lifetime of ten years has an equipment cost of less than two dollars per day. Can television equipment be counted upon to do the same? Either its costs must be brought into line with those of motion pictures, or television revenues must be increased sufficiently to compensate—if the exhibitor is to show any profit on his investment.

• TWO "OFF HOUR" VISITORS ADMIRE THE INTERIOR OF THE STUDIO, SAN JOSE, CAL.

What entertainment can be exhibited with television projection equipment? Football games, of course. Recent experiments showed that football telecasts, like motion pictures, are well attended in the theatres when the attraction is good, and but sparsely when it is not.

It is doubtful if daily theatre telecasts of baseball games would pay their way, and it is even more doubtful if baseball magnates would permit their revenues to be endangered in this manner. The same thing applies to other sports in an enhanced degree.

What else can be utilized to pay for the cost of television equipment? Any subject suitable for theatre television must be scheduled in advance in order that it may be advertised in advance, and there just aren't enough of these to justify the outlay for the equipment.

Color Television—Until some degree of order comes out of the present legal and technical confusion, it is impossible to foresee what effect color television in the home and in the theatre will have upon attendance. If color is such a highly desirable factor, the motion picture industry might well devote greater effort to pointing out that it has long since developed high-quality color projection. Unless television can match this quality when it does have color, it may well lose ground to motion pictures on the basis of comparison.

The above summarizes the television picture. Home television presents a temporary disturbing factor, but should ultimately adjust itself with no appreciable detriment to motion pictures. Theatre television looks overrated, with too many obstacles in the path for clear sailing. Color television is still off in the distance.

At this writing, the greatest menace may well prove to be the much despised phonevision. The ridicule and abuse heaped upon it from certain motion picture quarters now seems inspired by wishful thinking, for the viewer reaction to phonevision in the first experiments was surprisingly good. When a family can invite a dozen of the neighbors into its living room to watch a recent movie at a total cost of one dollar, we have a situation which may well cause the theatres plenty of trouble.

Houses Must Look "Theatre"

This brings us to the second part of the problem—what can be done to bring people into the theatre.

One of the best methods is to use the outside of the theatre to bring them inside. There are few types of business which get as much "off-the-street" patronage as does the theatre. If a house

is made to look "theatre"—that is to say, if it is given a real theatre appearance and atmosphere—it will attract people who are in a mood for pleasant relaxation and entertainment.

In the first place, the theatre front should sparkle with brilliant lighting and theatrical elegance. The small theatre, of course, cannot spend as much money on decoration as the large theatre, but it does not have to in order to achieve adequate results. If it is in a small community, it can still flash more "theatre" than any other building in the town. If located in a large city, it should pass up the gilt, marble, and other gingerbread, and concentrate on a decorative scheme which is restrained and yet in good taste.

The marquee should be made to do a selling job. It should be brightly illuminated and designed in good taste, so that it will attract attention to the theatre. The marquee letters should be large enough so that they can be seen at a great distance, and the feature attractions should be described so that they can be easily understood and not garbled with abbreviations in the manner of a classified ad. It helps a great deal if the marquee is decorated with pictures—either of a scene from the feature, or of one or more of the stars.

Displays must really perform their function of displaying. Frames should be kept clean and attractive, and publicity stills arranged so that they can readily be viewed from the street.

"Friendliness and real—not studied—courtesy should radiate from everyone connected with the theatre . . . Good public relations in the form of friendliness should begin at the cashier's window."

It would seem advisable to give the most prominent display space to the current features, for there is nothing more exasperating than to be attracted by a theatre display and then find a small card stating that the picture is scheduled for one or two weeks hence.

Coming attractions need a build-up, but they should be subordinated to the pictures which are actually playing and bring people into the theatre.

Ticket booths ought to be a credit to the theatre, for they are in prominent view from the street. They should be located conveniently and possess sufficient facilities to accommodate crowds, so that patrons will not have to wait in long lines for the privilege of turning over their money.

Advertising

No theatre can hope to be successful if it depends entirely upon off-the-street patronage and word-of-mouth advertising. All of the advertising media possible should be utilized in order to make it just as easy as possible for people to know what is playing.

There is considerable disagreement as to what percentage of the exhibitor gross should be expended on advertising. Producers claim that the exhibitor is now spending three per cent or less, and that he should be spending about eight per cent. No doubt the percentage varies widely among exhibitors.

Advertising for the theatre, like any other type of advertising, should pay for itself. If an exhibitor is now spending three per cent, he might experiment with stepping it up to five or six per cent for a reasonable time and see what happens. If his boxoffice shows an increase which more than pays for his additional advertising, it will be good business to put even more money into the advertising budget.

You will find that results will be proportioned, however, not by the amount of money you spend, but by the effectiveness of your advertising. Most of our theatre advertising is based upon the producers' pressbooks and is, therefore, so stereotyped that it has lost much of its appeal. Not all people are attracted because a picture is "sensational," "daring," or "shocking," or rush to the boxoffice when they see an illustration of a bosomy female who could never possibly get by the censors.

You might find that you will get much better results with a sentence or two describing the chief points and general character of the picture, as is done by the book publishers in advertising their fiction, and by writing your advertisements in simple, natural, down-to-earth language without overworked adjectives.

Theatre advertising should contain as much pertinent information as possible. Printing your schedule will prove a great convenience to your patrons, and may well prove the difference as to whether they will come to the theatre or stay at home on a particular night. Most people may be acquainted with the location of your theatre, but there are some who are not, and consequently you should always give your address. If you have parking facilities—and you should have if it is at all possible—tell about them in your advertising, and describe where they are located.

Promotion

There is a great deal more to operating a theatre than just going through the routine motions. If you do no more than the essentials, you might make a living, but your house is never going to be the proverbial gold mine.

There are some exhibitors who are outstanding for their contributions to the life of their communities, but it is an unfortunate fact that most are conspicuous mainly for their disinterest. The theatre is too often regarded as a cold commercial enterprise, and might just as well be situated on another planet as far as its value to the community.

Now, the theatre often possesses the largest seating auditorium to be found in an entire town or neighborhood. The exhibitor or manager should make it a point to contact all of the important organizations in his community and invite them to use the theatre for special gatherings when the time can be arranged conveniently. Such an exhibition of friendliness and community spirit may occasion some extra effort and even a little expense, but in the end it is going to pay rich returns.

There are a great many people who could and should be patrons of your theatre, and yet have never been inside it. You may not believe it, but there are some people who are timid about going to theatres. There are others who simply have formed the habit of going to some other house.

Once you can get men and women to step inside your theatre, even if it is for some other purpose, you will have an opportunity to show them what comfortable surroundings you have to offer and what a friendly person you are; before long you will have them coming frequently to an entertainment center where they believe they can feel at home.

Children may be small, but don't overlook them, because they will play a great part in your success. Encourage them to come to your theatre, rather than regard them as necessary evils. Children are great word-of-mouth advertisers. If a kid likes a picture, he will talk the ear off of everyone he meets telling them about it. If you are cross or severe with him, he will blacklist you not only with his family, but all over the neighborhood.

Public Relations

Theatre operation requires constant contact with the public. Anyone who doesn't like people should get out of theatre business.

Dealing with the public brings us to the third part of our problem—that of building up a steady and lucrative patronage by increasing comfort and entertainment. The business of making a steady patron out of the person who comes into your theatre begins the moment he walks up to the ticket window.

Friendliness and real—not studied—courtesy should radiate from every one connected with the theatre. It should begin with the exhibitor or the manager. His place is in the lobby during the hours when attendance is heavy. If you fail to do so, you are neglecting a very important part of your duties.

Study the face of every person who comes in or goes out of your theatre. If you know him, never fail to extend him a greeting and a few words of conversation when time permits. If his face is familiar because he has been in your theatre several times before, it is your place to step forth and be the one to speak first. He will feel flattered that you are able to recognize him among so many people, and he will continue to come to a theatre where he feels that he is a friend of the boss.

It is your employees, however, who can really make or break you. Remember that you are held responsible for every action of every employee who comes into contact with the public. If a patron receives an impertinent remark or a discourteous action from the cashier, doorman, or usher, he is going to blame it on your theatre, and you are the one who is going to suffer.

Good public relations in the form of friendliness should begin at the cashier's window. She should be pleasant at all times, and not become exasperated with every person who is slow in action or understanding. If you have a neurotic who gets rattled and insolent under the pressure of crowds, get rid of her before she drives away too many of your patrons.

• GENUINE FRIENDLINESS, IN THE FORM OF A WARM GREETING FOR EVERY PATRON, IS THE VALUED TRADEMARK OF THIS DOORMAN.

The doorman is not burdened with any great physical or mental demands. His greatest asset, therefore, lies in his public relations value of giving every patron a cheery smile and a friendly greeting.

Ushers are a very important cog in your public relations machine, and greater intelligence should be displayed in their training. Discipline is important, especially in a large theatre, but the common practice of giving them virtual military training along the lines of a rigid set of rules is both inefficient and outmoded. People would rather come into contact with human beings than with a bunch of robots.

School your ushers in the principles of courtesy until they become naturally courteous—teach them to use their intelligence so that they will be able to react to situations which may arise. Both your ushers and your patrons will be far happier.

Some theatre owners and some theatre employees — probably because they are able to push people around on crowded nights—have come to acquire the bad habit of regarding their patrons with more or less concealed contempt. Your patrons, after all, give you your living and have the right to be treated as guests who are paying their way. Some of them are more important than you are, and can buy and sell you ten times over.

The Theatre Lobby

The sparkle of the theatre front and the friendliness of the theatre personnel should be reflected in the lobby.

As few people see very much of the auditorium when it is illuminated, they form their impression of your theatre from the lobby. Here is where you can display your ingenuity and sense of artistic values.

It is your theatre achitect and interior decorator, of course, who will do the actual work, but you can determine the general motif to be followed. Whatever you do, be consistent. If you want a theatre of the gaudy pre-depression era, then make it just as theatrical as you possibly can. If you are following a restrained and conservative pattern, don't spoil the whole effect with a few blatant touches.

In spite of the considerable sums sometimes expended on them, theatre lobbies are often cold and uninviting. It

"While the candy stand should be made to supplement, rather than dominate the lobby, it can be made very attractive through the judicious use of chrome, glass and lighting."

is but rarely that we encounter one which achieves the comfortable warmth of a well-appointed living room. Lobby furniture should be comfortable and inviting, rather than a collection of stiff museum-like pieces. Murals and paintings often add considerably to appearance, but they must be selected with care and taste, so that they will not clash with the general pattern.

A fountain of running water cleverly illuminated is often striking, while goldfish pools and tanks of tropical fish, properly landscaped, are proven attention-getters. Growing plants is another method of adding life to an otherwise too-formal foyer.

Nearly every theatre now has a candy and refreshment stand, which can generally be counted upon to provide about 20 per cent of the total revenue. While the candy stand should be made to supplement, rather than to dominate, the lobby, it can be made very attractive through the judicious use of chrome, glass, and lighting.

Carpet Adds New Life

Theatre carpet has to bear unusually heavy traffic. When reasonably new, and when given frequent care through vacuuming and cleaning, it will maintain its bright appearance, but even the best carpet is short-lived in comparison with some other items of theatre equipment.

There is nothing which will give your house a shoddy appearance more than a worn and dirty carpet. It is so conspicuously in view that all of your decorative schemes will lose much of their effect when contrasted with it. Torn carpet, of course, presents a hazard to patrons that should never be permitted in any theatre.

New carpet, if you need it, is one of the best investments you can make for stimulating patron interest. It cannot fail to attract attention and will give new life to your whole theatre. This is especially true because of modern patterns and designs, for an outmoded carpet is almost as bad an eyesore as a worn carpet.

Carpeting, it is true, is expensive, and all-wool carpeting will become even more so because of the curtailment of imports from China and India. The solution might lie in a blend of wool with synthetic materials. These synthetic fibers take dyes readily, and have good wearing qualities. While their price at present is not much lower than all-wool carpeting, it is possible that their cost will be considerably reduced through increased production and improved methods of manufacture.

Seats Must Be Comfortable

You cannot hope to operate a theatre successfully if you have old-fashioned, hard, uncomfortable seating. Make no mistake about this. If your boxoffice is showing a steady decline, make an honest comparison of your seating with that of your competitors, and if your theatre

• CANDY STAND AND CARPET ALIKE ADD TO CHARM OF LOBBY IN ARGO, ELMONT, N. Y.

"There is nothing that will give your house a shoddy appearance more than a worn and dirty carpet. It is so conspicuously in view that all of your decorative schemes will lose much of their effect when contrasted to it."

chairs are distinctly inferior, replace them just as quickly as you can.

People attend motion picture theatres not only for entertainment, but for rest and relaxation. Once seated, they desire to concentrate their entire attention upon the picture on the screen. It is simply impossible to enjoy even the best picture if you are uncomfortable for a matter of hours, and you cannot expect people to lay out money in return for discomfort.

Limitation of the size of your theatre, and consequently of your budget, is no excuse for not having comfortable seating. If you cannot afford de luxe chairs, there are a wide variety of modern comfortable chairs to be had in almost every price bracket. If the metal body of your seating and the padding are still good, you can achieve the appearance of new seating with nothing more than a recovering job.

There are certain points to bear in mind, if you sincerely have the comfort of your patrons at heart. You are obviously interested in having as many seats as possible in your theatre, but don't strive for the narrow seating of a football stadium. It is more profitable to have slightly fewer comfortable chairs which will be filled at every performance than a larger number of narrow uncomfortable ones which will always be half empty.

If you can possibly afford to do so, buy the wider types of chairs with thick padded backs and deep cushions. The life of the chairs may be extended through the use of covers, but they must be of a type that can be readily slipped off for recleaning or replacement.

Heating and Ventilation

Good heating, air conditioning, and ventilation systems are requirements for every theatre. The theatre is a public gathering place where people are confined for hours, and they must find it pleasant and comfortable.

Air conditioning is expected of every theatre. There are many people who go into a movie on hot summer days not because they want to see the picture, but simply to get cool. On the other hand, you can do too good a job with your cooling. Keep a close watch on the weather outside, and regulate your temperatures so that the contrast is not too sudden or too pronounced.

We have not heard of anyone going to a theatre simply to get warm, but there are many who stay away because the heating is insufficient in winter, and they do not wish to shiver through a double feature or run the risk of taking cold. If you are consistently having trouble with your heating plant, don't just shrug your shoulders and look sympathetic when your patrons complain.

Have the necessary repairs made at once before the trouble begins to show itself at the boxoffice.

Greater attention should be paid by exhibitors to the ventilation of their theatres. Offensive odors are commonplace in many theatres, and it is surprising that more owners have not awakened to the fact. If such a situation is permitted to continue, there is nothing that will drive patrons away faster.

All unsatisfactory conditions pertaining to air conditioning, heating, and ventilation are a direct reflection on the management. The exhibitor, his manager, or some other responsible person should make frequent inspections to make certain that the theatre is comfortable. You are not going to please everybody, of course, but there is not excuse for conditions which should be obvious to anyone taking the trouble to check for them.

How's Your Housekeeping?

Cleanliness is something that should be taken for granted in every theatre, but unfortunately this is far from being the case. Any theatre, no matter how expensive or elaborate it may be, will quickly take on a run-down appearance if it becomes dirty and untidy.

Good housekeeping should begin with the front of the theatre. It may not be your place to take care of the sidewalk, but if you permit the outside of your theatre to become cluttered with paper and other rubbish, it will stigmatize your entire house as being dirty, and keep people from coming in off the street.

Every part of the theatre should be kept as clean as possible at all times. It is difficult enough to keep things straightened in the home, and when you have to clean up after hundreds or thousands of people (some of whom seem to have graduated from the dirt floor era), it means keeping on the job nearly all of the time. While your maintenance men can keep working during performances, please impress upon them that they are not to push your patrons around while they sweep, or mop them out of the lobby.

"Children may be small, but don't overlook them because they will play a great part in your success. Encourage them to come to your theatre, rather than regard them as necessary evils. Children are great word-of-mouth advertisers."

Restrooms are finally beginning to receive the attention which they deserve, although conditions in some theatres still leave much to be desired. It is not enough to start off the day with your restrooms clean and orderly—they must be inspected at frequent intervals in order to keep them that way. A comfortable and sufficiently large lounge or smoking room adjacent to both restrooms will help to avoid congestion and disorder.

Soap and water are still good aids to increased boxoffice receipts. With the aid of the many modern electrical conveniences, cleanliness is now far less of a task than it was in the old days.

Modern Projectors Essential

In view of the fact that people come to a theatre to watch pictures projected upon a screen, it would seem axiomatic that the projection booth and its projection equipment should be considered more important than anything else.

This is far from being the case. A motion picture projector, in spite of the fact that it is a piece of precision equipment, is, nevertheless, a well-constructed mechanism which will function for a very considerable time, if given proper care. Some of them are certainly being pushed to the limits of their existence.

There is a mistaken idea prevailing among some exhibitors that as long as projectors will operate there is no reason for replacing them until they fall apart. Projectors made 15 years ago or more, in comparison with modern equipment, are just as obsolete as automobiles of the same vintage.

Perhaps you think that your patrons can't tell the difference. Don't ever fool yourself. Even if they are your steady patrons, they occasionally go to other theatres where they may have an opportunity to watch pictures presented with modern projectors. They will observe the smoother operation, the virtual elimination of breakdowns and interruptions, and the relative freedom from flicker and

• CHILDREN, SUCH AS THESE AT THE INGLEWOOD, NASHVILLE, TENN., PLAY AN IMPORTANT ROLE IN THE SUCCESS OF A THEATRE.

travel ghost of the new equipment; and they will contrast it to your detriment if your projectors are old.

Some exhibitors permit obsolete projection equipment to remain in the booth because they don't know enough about it to realize that it is bad. If your projectors are of ancient vintage, you would be wise to spend some hours in your booth and watch your equipment in operation.

Then, make observations of some of the modern mechanisms which have been designed since the end of World War II. If you can notice a startling amount of difference—and you should if you belong in show business—just bear in mind that your patrons aren't so stupid, either.

There is one other thing to be considered. The added eye strain caused by the flicker and other undesirable attributes of old projectors may induce some people to stop going to the movies entirely because of headaches and impaired sight. While they may not lay the blame at your door, the fact remains that you have lost them as patrons.

Enough Light on the Screen

Much of what has been said of projectors applies to arc lamps as well. There are still a large number of low-intensity lamps to be found in motion picture theatres, and even some of the older models of high-intensity lamps are inadequate for putting sufficient light on the screen.

It may be advisable for you to compare the lighting in your theatre with that of other houses of comparable size, as you may have become so accustomed to looking at inferior lighting that you will no longer be able to recognize it as readily as some of your patrons.

When lighting is poor, the probabilities are that it is because of inadequate arc lamps, although the trouble may be due to improper positioning of the lamps, or because proper burning is not being maintained of correct size carbons. Your theatre supply dealer can be of great help to you in a matter of this sort.

The alternating current coming in from the outside must be transformed into direct current by means of a motor-generator or rectifier for proper operation of the arc lamps. It is important that the generator or rectifier be of large enough capacity to supply the amount of power required.

Here, again, you may do well to consult with your theatre equipment dealer, if you are in any doubt about your arc lamp power supply. The marked improvements that have taken place in generators and rectifiers in the last few years makes it a matter of good business to replace any obsolete equipment of this type in order to achieve high-quality picture presentation.

There is no point here of entering into the question as to whether a motor-generator or a rectifier should be employed. Formerly, the greater stability and lower maintenance cost of the generator were more or less balanced by the smaller initial cost of the rectifier. Of late, some manufacturers have availed themselves of mass production methods in order to bring generators into a comparable price range with rectifiers.

"It is not enough to start off the day with your restrooms clean and orderly, they must be inspected at frequent intervals in order to keep them that way" . . . "Soap and water are still good aids to increased boxoffice receipts."

Some Sound Advice

Unsatisfactory sound causes the patron more irritation than any other single factor. Poor projection will cause far greater ultimate damage because of eye strain, but it is a condition which develops over a considerable time and is, therefore, not noticed as readily. When the sound goes bad, however, tempers go bad, and nerves really snap.

It is impossible to enjoy a picture if the sound is not right. If too low, it is necessary to strain one's ears, and then much of the dialogue may be missed. Equally bad, and a condition far more frequently encountered in theatres, is the excessive loudness which threatens to transform movie-goers into potential candidates for psychopathic institutions.

You can regulate the volume of your sound, but you cannot regulate the tone quality of an obsolete sound system. There is no longer any excuse for the rasping, mechanical renditions of speech and music which one hears in altogether too many theatres.

Modern sound systems give natural and harmonious reproduction, with the proper tonal qualities for high and low-frequency sounds. If you have an old-fashioned pre-war sound system, you can really make your patrons happy by junking it in favor of one capable of reproducing sound effects the modern way.

While his presence is required principally in the lobby during a performance, the exhibitor or manager should make brief, but frequent, inspections of the picture presentation. The projectionist can generally be relied upon to watch his lighting and monitor the sound, but he is, after all, only human, and it is possible for him to slip up on occasions. The man on the floor, moreover, is in a position to receive the comments and criticisms of the patrons, and relay the information to the projectionist, if he feels that it has any merit.

Survival of the Fittest

If the exhibitor will make an honest and sincere examination of the faults of his own theatre in the light of the above suggestions, he will no doubt find a good deal that can be remedied. Whether he will act upon it is another thing. You can be sure that there will be some owners who will tell you that they have always been able to get by and to make a living with the least possible effort—and with a minimum consideration of their patrons.

That is true, or rather, it was true in the old days of the war, when even the most decrepit and mismanaged theatre could reap golden profits. It is no longer true today—in the face of competition from television and energetic theatre owners who are improving their theatres rather than sleeping at the switch.

What we need today are good pictures produced to appeal to a wider range of the population . . . better advertising, promotion and programming of attractions . . . clean, comfortable surroundings in an atmosphere of courtesy . . . modern booth equipment so pictures can be presented properly and to best advantage.

Our motion picture theatres that possess all of these points don't have to worry about television or "hell or high water." They will be around at the finish.

• SPIC AND SPAN RESTROOMS, KEPT ORDERLY, ARE PRICELESS GOODWILL BUILDERS.

BOOK ONE:
Design and Construction

Design

SOME TECHNIQUES FOR THEATRE LIGHTING ..... *Robert T. Dorsey* 2
A Few Treatments for Line and Form Are Presented To Indicate the Versatility of Lighting in Design

INTERIOR DESIGN AND COLOR COORDINATION 5
Case Examples Are Used To Show How A Decorative Scheme May Combine the Functional and Esthetic

BEHAVIOR OF ACOUSTIC MATERIALS.... *Richard K. Cook* 12
A Review of Popular Sound-Absorbent Substances And Factors To Be Considered In Their Selection

1950-51 REVIEW OF NEW THEATRE CONSTRUCTION 16
A Pictorial Coverage of the Design and Structural Trends in Recently Opened, Award-Winning Theatres

CARIB, Miami Beach, Fla. 17
NORTHWOOD, Baltimore, Md. 21
CAPITAN, Pasadena, Texas 24
WATTS, Osage, Iowa 26
WESTOVER, Richmond, Va. 28
STATE, Cuyahoga Falls, Ohio 30
TEXAS, Kingsville, Texas 32
MERBEN, Philadelphia, Pa. 34
GUYAN, Logan, W. Va. 37
HAVEN, Brookhaven, Miss. 40
EL RANCHO, Victorville, Calif. 42
GARMAR, Montebello, Calif. 44
TUSCUMBIAN, Tuscumbia, Ala. 46
SHORE, Huntington, L. I., N. Y. 48
BEACH, Cape May, N. J. 51
HOLIDAY, Park Forest, Ill. 54
PLAZA, Washington, D. C. 56
PARAMOUNT, Lethbridge, Alberta, Canada 58
BROOK, Brooklyn, N. Y. 60
FISKE, Oak Grove, La. 62
FOX, Missoula, Montana 64
CREST, Great Bend, Kansas 66
PARADISE, Los Angeles, Calif. 69
PARK, Park Falls, Wis. 72
RAPIDS, Eaton Rapids, Mich. 74
HILAND, Albuquerque, N. M. 76
NEW MAYFAIR, Philadelphia, Pa. 78
ALEX, Alexandria, Ind. 79
MARS, Mars, Pa. 80
REULE, Medina, N. D. 81
SPARTA, Sparta, N. J. 82
ZOE, Pittsfield, Ill. 83
REGENT, Algiers, Algeria 84
CAPITOLE, Beyrouth, Lebanon 85
CHAPULTEPEC, Mexico, D. F. 86
NACIONALE, Mexico, D. F. 87
STAR, Cebu, Philippine Islands 88

THE LAMELLA TIMBER ROOF 89
The Natural Merits of Wood are Complemented by Safety and Eye-Appeal Thru Interlaced Timbers

OVERHEAD STAGE STRUCTURE REQUIREMENTS ..... *C. E. Tompkins* 94
An Expert Analysis of Correct Gridiron Design From the Operational and Serviceability Angles

HOSPITAL THEATRE CATERS TO COMFORT 99
Unique Seating Plan and Graduated Floor Provide Ample Leg Room and Clear View for Disabled Cases

A MODERN ALL-NEGRO THEATRE 102
Facilities of Highest Order Are Provided in Newly Opened New Orleans House for Colored Patrons Only

Construction and Materials

A DETAILED STUDY OF CONCRETE FLOORS 106
The Basic Ideal Type of Surface for Theatres and Its Kin, Such as Terrazzo, Are Treated at Length

HOW TO KEEP WALLS AND FLOORS DRY 117
Special Waterproofing Compounds for Masonry and Cement Prevent Entry of Moisture

FIRE-SAFE FIBERGLAS BOARD AND TILE ..... *Willis M. Rees* 120
New Incombustible Material Answers the Need for Deadening Sound in All Parts of Theatre

THE POTENTIAL USES OF MONASTRAL PIGMENTS 124
The Fastness and Durability of the Colors of Value in Construction and Maintenance

Drive-In Theatres

SECOND ANNUAL DRIVE-IN AUDIENCE SURVEY ..... *Dr. Rodney F. Luther* 128
Detailed Poll of Typical Metropolitan Area Group Reveals Basic Traits of All Outdoor Theatre-goers

MORE ABOUT DRIVE-IN DEPRECIATION 135
Government Takes First Step in Drawing Up of Fair Schedules Anxiously Awaited by Drive-In Operators

DRIVE-IN THEATRES OF THE 1951 SEASON 137
A Breakdown by Territories and States of Their Locations, Capacities, Ownerships, and Policies

SEPTIC TANK SYSTEMS FOR DRIVE-INS ..... *George M. Petersen* 169
The Functional Requirements for an Ideal Type of Sewage Disposal Are Studied With Recommendations

THE MARTIN PREFAB DRIVE-IN PLAN.....*C. L. Patrick* 174
How a Southern Circuit Produced and Constructed an Amazing Total of 20 Complete Units in a Few Months

THE FOUR-SCREEN DRIVE-IN PLAN 178
Construction Economies and More Flexible Operation Afforded Under an Ingenious Quadruple Arrangement

A MOBILE OUTDOOR THEATRE CIRCUIT 181
Portable Power Units Supply All of the Operating Requirements of Three Theatres in Minnesota Woods

1950-51 REVIEW OF NEW DRIVE-IN CONSTRUCTION 184
A Pictorial Survey of Design and Other Features Apparent in New Drive-Ins Which Opened Recently

TWIN, Louisville, Ky. 185
ATLANTIC, Pleasantville, N. J. 188
COWTOWN, Ft. Worth, Texas 190
RIVERVIEW, Carrollton, Ky. 192
LITTLE DIXIE AIRWAY, Mexico, Mo. 194
KENO FAMILY, Kenosha, Wisc. 196
PYRAMID, Beaumont, Texas 198
SEQUOIA, Visalia, Calif. 200
EATONTOWN, Eatontown, N. J. 202
CARO, Caro, Mich. 204
GENEVA, San Francisco, Calif. 206
CENTRALIA, Centralia, Ill. 208
TERRYTIME, Woodward, Okla. 210
LOST RIVER, Bowling Green, Ky. 212
SUNSET, Woodland, Calif. 214
HILLCREST, Canton, Ill. 216
COLONIAL, Madison, Tenn. 217
JEFFERSON, Dallas, Texas 218
COLONIAL, Thibodaux, La. 219
FAMILY, Espy, Pa. 220

THE UNUSUAL FLY-IN DRIVE-IN 221
The Air Age Overtakes the Outdoor Theatre With Special Provisions for Flying Patrons

STATION SYSTEM REFRESHMENT VENDING ..... *Charles B. Blood* 223
The General Operating Essentials of a Widely Used Selling Method Are Discussed With a Specific Case

CAFETERIA SYSTEMS FOR DRIVE-INS.....*Philip L. Lowe* 226
Notable Speed-Up in Refreshment Sales Effected With Less Help Required and Better Cash Control

RECREATION AREAS IN OUTDOOR THEATRES 233
Simple Playgrounds and Miniature Amusement Parks Are Studied in Regard to Equipment and Operation

AN AUTOMATIC TRAFFIC CONTROL SYSTEM 238
A Unique Electric Signaling Device Clearly Shows Empty Speaker Stations on Board at Each Ramp Head

MORE ABOUT INSURANCE FOR DRIVE-INS ..... *M. Monroe Fass and E. W. Collins* 240
Additional Light Is Shed on the Problems Involved In Seeking Proper Coverage for Many Contingencies

INCIDENTAL EQUIPMENT AND SUPPLIES ..... *Albert Bernstein* 242
A Detailed List of Small, but Important, Items Essential to Smooth Drive-In Theatre Operation

Advertising:

A

AMERICAN PLAYGROUND DEVICE CO. 252

B

BALLANTYNE, CO., THE 248

D

DIECAST ALUMINUM SPEAKERS, INC. 249
DRIVE-IN THEATRE MFG. CO., INC. 244, 245

K

KOILED KORDS, INC. 251

M

MARSH WALL PRODUCTS, INC. 126

N

NATIONAL THEATRE SUPPLY 246, 247

R

RILCO LAMINATED PRODUCTS, INC. 125

T

THEATRE EQUIPMENT CO. 250

W

WHITNEY BLAKE CO. 251

DESIGN

1950-51

Some Techniques for Theatre Lighting

A Few Treatments for Line and Form Are Presented To Indicate the Versatility of Lighting in Design

By ROBERT T. DORSEY
Engineering Division, Lamp Department, General Electric Company

Due to its unique ability to create a wide variety of decorative and functional effects, lighting has long been recognized in the theatre field as a versatile and flexible design medium. As a matter of fact, some designers use lighting almost as a finishing material to enhance surface finishes, to emphasize forms, and to increase the range of brightness and color possible with pigments. The combinations of today's varied types of light sources and materials are practically unlimited, as are the effects that result.

The purpose of this article is not to present specific solutions to particular lighting problems, but rather to outline some effective and perhaps somewhat unusual ways in which basic lighting techniques may be used to create forms of a dramatic, yet practical, nature. It is hoped that theatre designers may find inspiration in the ideas set forth which they may incorporate into their work at the drawing boards.

The accompanying pictures, which were taken during demonstrations of lighting techniques at the General Electric Lighting Institute, are intended to illustrate (within the limitations of black and white photographs) a few combinations which exemplify fundamental methods of lighting. Each individual pattern may, of course, suggest application in a particular part of the theatre, but the whole might well be used as a composite mural in a lobby, foyer, auditorium, lounge, or even on the back wall of a refreshment bar.

Set forth below are brief descriptions of the techniques apparent in the illustrations, and recommendations are made as to how they might logically be employed to establish a broad variety of moods through the theatre by dramatic, albeit functional, arrangements.

Smooth Tones of Color

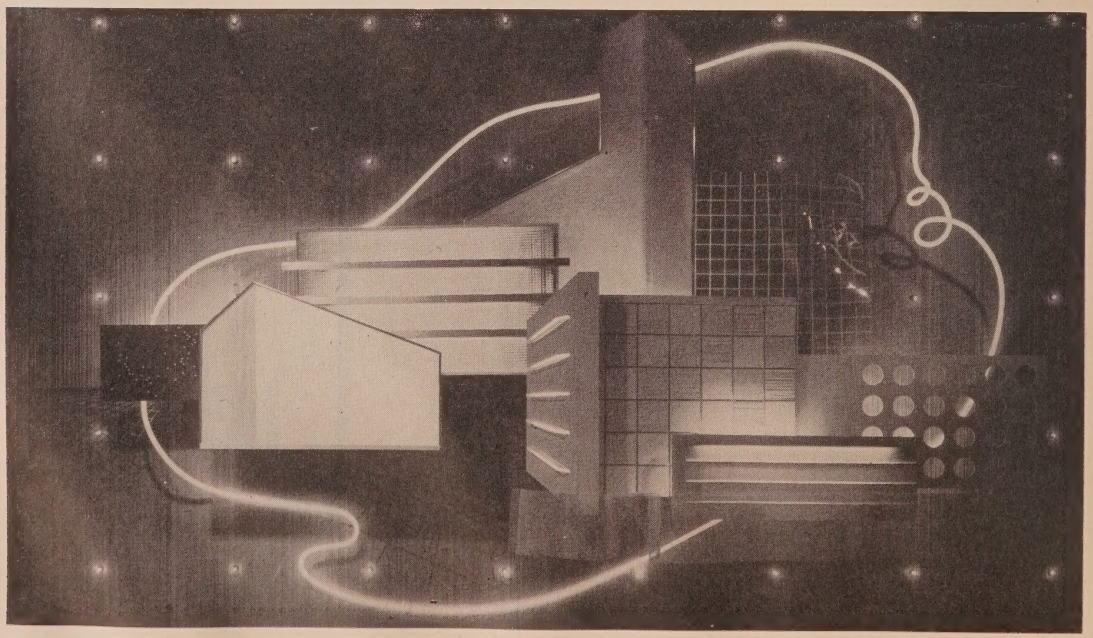
This technique usually takes the form of wall lighting and cove lighting where it is desired to maintain the effect of a flat plane. If the rows of fluorescent or filament lamps are placed out from the surface to be lighted a distance equal to ¼ that from the lamps to the far side of the surface, a gradual variation in brightness is produced. This can be

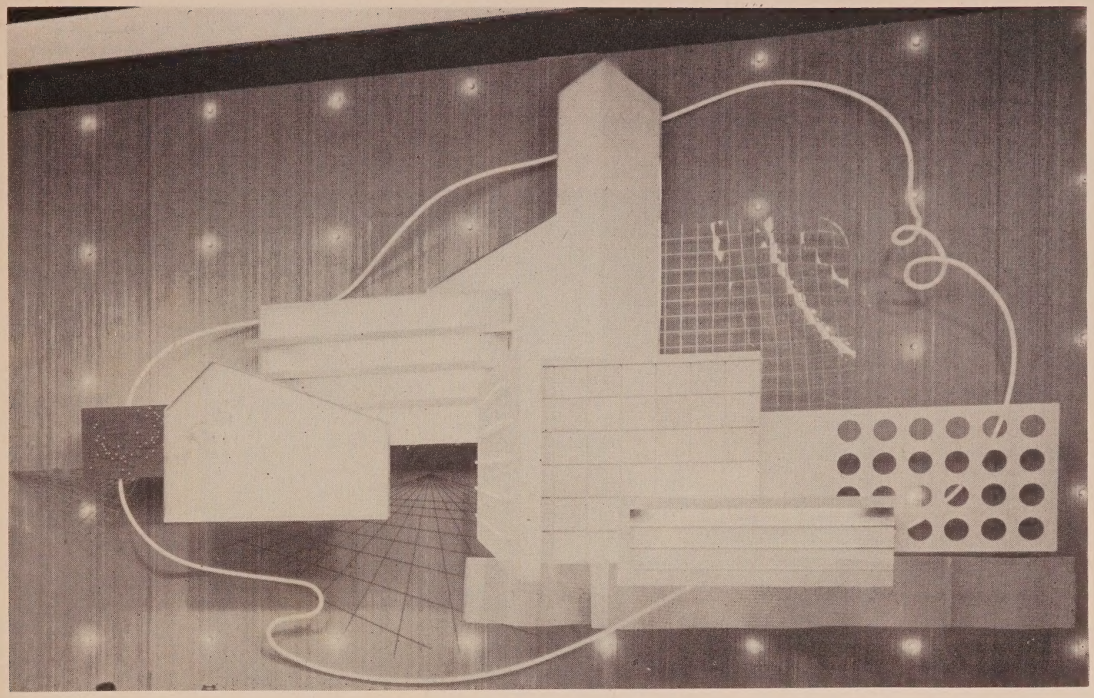
BRIEF: ***Lighting . . . powerful key to the unlocking of a bottomless treasury of dramatic visual effects . . . is a prime need in the theatre to infuse life and feeling into the forms and lines of the physical structure . . . Its multiplicity of tones may be used for a wide range of purposes . . . from instilling a mood of quiet serenity in the auditorium to imparting a dazzling brilliance to the front.***

Just as a deck of cards may be shuffled into an endless number of combinations . . . so a few basic patterns of light may be mixed and remixed in a wondrous kaleidoscope . . . whose size is limited only by the ingenuity of the user . . . Some of these fundamental lighting elements such as: smooth tones of color . . . color modeling . . . silhouette lighting . . . lighting for texture . . . patterns in brightness . . . edge-lighting . . . and black light . . . are discussed in the following article.

Some novel applications of light are shown . . . but no attempt is made to depict existing theatre examples . . . lest the reader's imaginative powers be hindered . . . Here is a real challenge . . . especially for the designer!

A DRAMATIC INTEGRATION OF LIGHTING with forms, materials, and colors results in a striking composite whose elements might well be incorporated in a theatre design plan. Demonstrated at the General Electric Lighting Institute, this novel arrangement combines spotlighting, built-in fluorescent and filament lamps, tubing bent in three dimensions, and a pattern of small lamps set in the background. Other examples follow.





HERE THE DISPLAY IS LIGHTED IN FRONT with a uniform tone of color. A combination of blue and gold fluorescent lamps is used which produces a color mixture pleasing to patrons' complexions. While the effect of this lighting by itself is flat, such a treatment is useful as a base upon which variations in color and brightness can be superimposed. The final effect should prove to be soft, rather than sharp and dramatic.

made more uniform by using reflectors to direct light to the far side. Placing lamps close to the surface creates a line of high brightness near the lamps, and the rest of the surface is relatively dark.

Uniformity is desirable in the auditorium to reduce distraction from the picture. In the foyer, uniform wall lighting, might, for example, be used as a setting for a spotlighted poster panel or decorative feature. In the lobby, variations leading to high brightness may be more appropriate to create lines of light for attention and to help pull patrons into the area.

Variations lend interest and help break up surfaces which might otherwise tend to be monotonous. Coffers with blue and gold fluorescent lamps, to take a case in point, can create a subtle, decorative color pattern, and the mixture of light is flattering to patrons' complexions Large ceiling areas can be given new life by using spotlights with tinted color roundels, as contrasted with the usual continuous cove lighting.

Colored light on surfaces of the same color provides intense saturation and brightness that is difficult to achieve in any other way. Such colors, of course, are best for accents rather than large areas. Spotlights on posters offer opportunities for increased attention and unusual effects. Tints are generally better than saturated colors.

Color Modeling

Such effects range from the subtle methods used on the stage to mold actors' faces and create depth in scenery to strange and bizarre treatments of conventional or abstract forms.

Panels carved in bas-relief give a greater feeling of form with different colors from opposite sides. Such treatments might be used either on ceilings or walls. Here, again, combinations of colors can be chosen to achieve a mixture of reflected light that gives both patrons and room decorations a pleasant appearance.

Silhouette Lighting

This can be used to emphasize form, such as colored backgrounds to set off plantings, statuary, free standing letters for signs, and to emphasize the texture of decorative screens and wall treatments. Best results are generally obtained when the background is smooth in brightness, texture, and in contrasting color to the object in front.

Lighting for Texture

Rough surfaces such as striated or sand blasted plywood, coarse-woven fabrics, and embossed papers respond well to light at a grazing angle. This application requires equipment with good optical control, such as projector or reflector filament lamps, or fluorescent lamps in wide reflectors of properly curved, polished metal.

Shiny surfaces, such as ceramic tile, embossed metals, brushed metals, leaves of plants, candy wrappings, and configurated glass or plastic take on sparkle when lighted by bright, concentrated light sources such as clear filament lamps or projector spotlights. The same may be said for translucent materials lighted from behind as well as opaque ones lighted from the front.

Patterns in Brightness

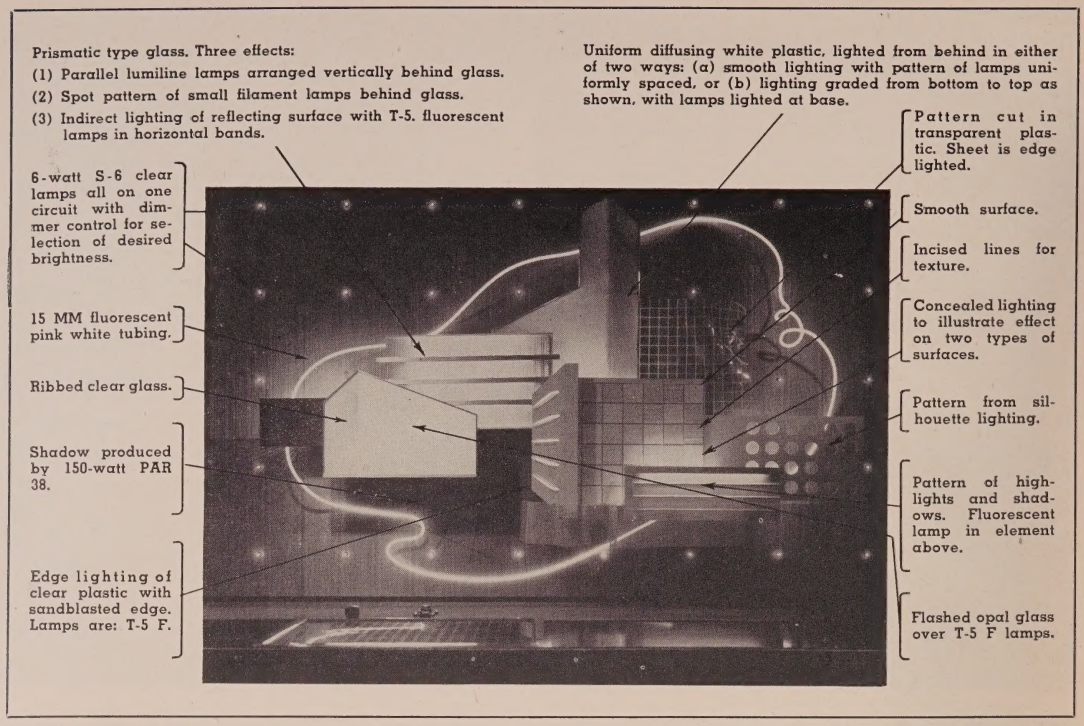
A popular concept in marquee lighting involves the use of lines of light, such as fluorescent luminaries leading to the lobby. Such a treatment might be extended into the foyer and even into the auditorium, stepping the brightness down to adapt patrons' eyes gradually to lower levels of illuminations in the auditorium.

Also popular is a pattern of downlights in a regular or irregular arrangement to give sparkle and to create a dramatic effect. These might have the bottoms of reflector lamps exposed under the marquee and in the lobby, but shielded in foyer and auditorium.

Length-wise rows in a narrow space tend to emphasize its length, while cross-wise rows create the effect of greater width. A pattern of short cross-wise rows becomes visually a long element and, to some extent, combines the two effects. Such patterns could well be interrupted at the refreshment stand to give it additional emphasis.

Edge-Lighting

Edge-lighting is a familiar technique for dramatic, decorative elements, signs and even fairly large-scale murals. Best results are obtained when the indentations in the sheet of plastic or glass near the lamp are shallow but become progressively deeper toward the un-



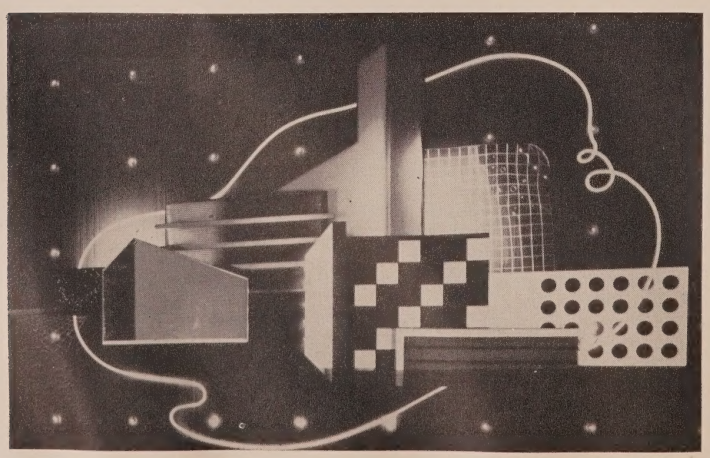
lighted edge. Many unexploited variations lie in the direction of edge lighting in color (through clear material), combined with colored and textured surfaces behind the edge-lighted panel.

The usual problem is getting a sufficient amount of light into the edge of the sheet. Extensive studies show best results when the edge is flat and polished with the light source close to the edge. This distance is limited by the heat of filament lamps, but fluorescent lamps can be located within ⅛″ of the edge. Sheets ¼″ thick are better than ⅛″, and ½″ thickness is even better. Slimline lamps ¾″ in diameter, operated at 0.200 or 0.300 amperes, are recommended. A white cavity around the lamp will increase brightness approximately 10%.

Black Light

Black light is steadily increasing in popularity for auditorium murals, and interest is developing in its use for posters. Unexploited possibilities include curtain treatments and large area ceiling patterns in the foyer and balconies.

MERCURY BLACK LIGHT LAMPS have been used here to energize the parts of the forms treated with fluorescent materials, such as map pin heads and wire grid at left, the checkerboard pattern and perforated panel. Edge lighting, tubing and background lamps supplement black light.



As far as the amount of radiation is concerned, approximately one watt per square foot of area lighted may be used as a guide for designing installations to be used as running lights in the auditorium, assuming conventional placement of the EH-4 (100-watt flood) mercury lamps with light-absorbing filters. When the AH-5 (250-watt) mercury lamps are used, about 2/3 watt per square foot is suggested. The fluorescent lamps require large areas of filter, and "pot-blue" glass is often used. This transmits somewhat more black light than the filters ordinarily used with mercury lamps, but also transmits more visible energy. Therefore, it may be objectionable in the auditorium where light finishes are used. Approximately ½ watt per square foot is suggested.

In the foyer and lobby, much higher amounts of radiation are desirable, so 10 watts or more per square foot are recommended.

Conclusion

Lighting tools are available for all of these techniques. The sizes, types and colors of fluorescent and filament lamps on the market today, and the equipment by which their light can be controlled, offer the theatre designer almost unlimited freedom in putting to work whatever effects his imagination may bring forth.

Interior Design and Color Coordination

Case Examples Are Used To Show How a Decorative Scheme May Combine the Functional and Esthetic

The selection of a design plan for his playhouse is a many-sided decision for the theatre operator. He is constantly aware that the owner's one basic purpose is to make a profit. In order to do so, the theatre must appeal to a large group of patrons; but, as people in the mass are rather abstract, gauging their general tastes is perplexing. Since there can be no formula approach, design becomes largely an individual problem.

The operator must consider budget limitations, class of clientele served, competing structures, inexpensive maintenance, and other factors. The overall objective is beauty and public appeal at reasonable cost.

BRIEF: ***There is no denying the fact that appearances do count in every phase of modern life . . . an axiom which applies particularly to the motion picture theatre . . . Nine times out of ten the prospective patron will . . . brushing picture considerations aside for the moment . . . plunk down his money at the boxoffice of the house which he knows is attractively appointed . . . inside as well as out . . . A smartly contrived interior design scheme . . . which imparts an air of elegance . . . will excite both admiration and appreciation in the movie-goer.***

The finest decorative elements in the world . . . however . . . will have little value unless they are intelligently coordinated . . . with regard to: color . . . lighting . . . and choice of materials . . . The following article discusses the basic goals to be sought in a theatre decorative plan . . . and offers concrete suggestions on how they may be achieved.

Interior design and color coordination, as applied to most theatres. must be both functional and esthetic. The aim is to build up an atmosphere of eye-compelling beauty which is also sufficiently cheerful and inviting to magnetize and bring in the public. The modern theatre, for reasons of economy, usually depends on simple designs, materials, and acoustics to achieve these effects.

Even a quite limited budget is not an insurmountable barrier. Dorothy Draper, noted decorator, points out that most theatre operators are not aware how easy it is to do over a theatre at small cost with a clever theme and color coordination. Theatre planning calls for a closely integrated design with lighting, form, and color correlated. When a theatre is modernized the broad design must work into the basic existing structure.

After the general design is agreed upon, the separate phases to be worked out involve seating, materials, color, and lighting. The whole plan should be considered as packaging job which starts outside with the marquee, continues with the doorman's uniform, lobby, foyer, and on into the auditorium, rest rooms, etc. The entire design question is best placed in the hands of one master planner, since it is confusing to have one person responsible for color coordination, another for floor coverings, and a third for lighting.

Interior decoration should bear a definite relationship to the architecture. Bad architectural features can be minimized by clever use of color. For example, a rococo interior would not look well if painted in large surfaces of a sharply contrasting color. It would have great charm, however, in ivory and gold leaf or soft rose and blue shades.

Design is also dependent on the size of the theatre. A large house, which requires a more intimate atmosphere to offset the coldness of extraordinary depth and large expanse, might attain its objective by proper use of stronger colors, softer lighting, and architectural modifications. By the same token, the smaller theatre might benefit by these design principles in reverse to make it appear larger and more important.

THE IMPORTANCE OF COLOR

Color is the reflection of light from all materials. A brown upholstered seat is brown only because the dye materials in the material reflect this color from the rays of light; the other colors in the rays of light are all absorbed by the fabric. These dye materials are called pigments and may be mixed in different combinations to produce various colors.

Mood and Atmosphere

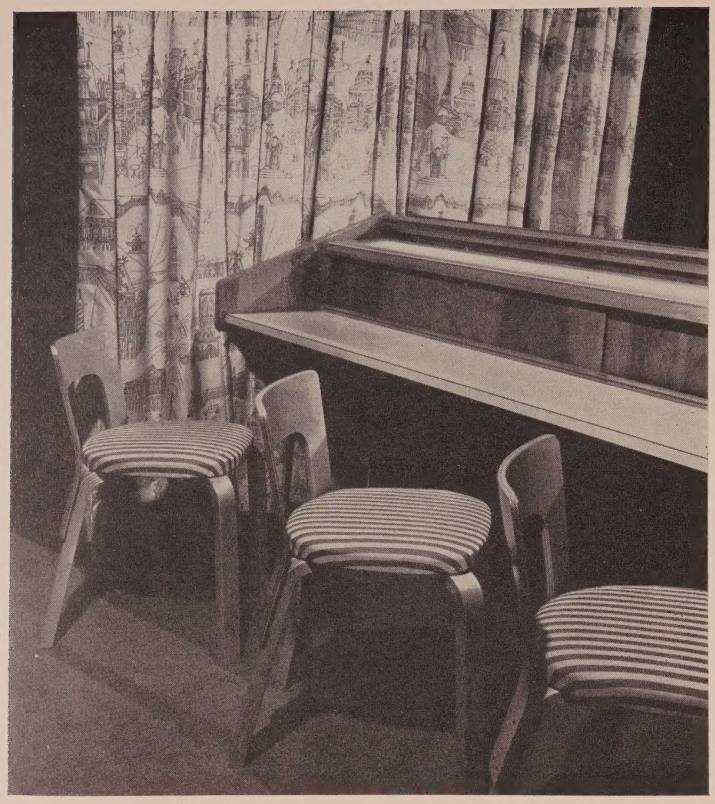
Howard Ketcham, noted design and color engineer, states that color should function to attract attention to the theatre and create in the theatregoer a mood of expansiveness and readiness to enjoy the show. Certain colors are more effective than others in enlivening the spirit and can be applied after consideration of such factors as size and shape of the theatre, sections of the country, and the functional factors of soiling and fading.

A proper choice of colors can create a certain mood and a definite atmosphere. For example, in order to build up a cooling atmosphere in New York's Astor, Dorothy Draper recently redecorated the auditorium in background colors of gray. The backdrop is maroon and seats are upholstered in mulberry. The lobby is painted white with bronze-gold decorations. The entire effect is one of airiness and cool comfort.

Illusions of Size

The theatre operator may find a clever use of color particularly advantageous when his theatre is so small that the psychological effect of entertaining a

THE INTIMATE AND MODERN LOUNGE of the Paris, N. Y. C., has brown carpeting with yellow, gray, and brown walls and natural-finish furniture. Wallpaper by the birch stairway is figured with etchings.



A CORNER OF THE POWDER-ROOM in the Paris, N. Y. C., shows a section of the long dressing table with concealed lighting in the glass counter, natural-finish, plastic-upholstered chairs, and draperies.

group is lost, or when it is so large that the individual feels "buried in the crowd." The right choice of color can bring the theatre down or up to size.

Colors which have blue in them appear to "recede," while those which contain red or yellow seem to "advance" to the eye. Thus, a red chair 20′ distant will seem to be a step nearer than a blue or bluish-green chair 20′ distant (from another angle, of course, so that the eye does not have the opportunity to compare the positions on the floor.)

Example of Sophistication

An effective color scheme is that of the Paris, New York, designed by Warner-Leeds. The theatre is small with 150 seats in the mezzanine and 421 in the orchestra. Medium light-steel gray is used for the walls of the auditorium with a white ceiling to provide good reflection for the indirect lighting. Seat upholstery is terra cotta and the chair arms are in natural finish birch wood. The curtains are a chartreuse hue, while the carpet is rust color. The resulting sophisticated effect is especially appropriate to this small, select theatre.

Example of Simplicity

On the other hand, the Trylon, Forest Hills, Long Island, N. Y., a neighborhood house in an unsophisticated suburban setting, achieves—with an overall color scheme of rust, green, and shades of beige and brown — a simple effect which contrasts with that of the Paris.

Glamor Outside

Theatre marquees and ticket booths, since they are the first and closest contacts between patrons and management, should be decorated in glamorous tones which will serve to accentuate the showcase appearance of the outside. Lighting and wide glass door entrances which reflect the decorative impact of the foyer or lobby also serve to create an inviting impression.

Decorative Beauty Inside

The main opportunity for using color effectively lies in the lobby and foyer, since the interior is usually dimly lit. Patrons see the auditorium only between pictures, or when they are leaving, and while its physical appearance guides their impressions of the theatre's quality, it is the lobby and foyer which set the mood; hence, they need principal attention.

A good plan for the foyer is to use a light, clear color such as pale blue-green, plain blue, or yellow for the entrance walls and a dark contrasting shade (deep red for the blue-green, or blue and dark blue with the yellow) for the end-walls, which generally are too far apart in proportion to the depth. This effect can be further enhanced by placing mirrors above dado height along the walls leading into the theatre.

Decor of Auditorium

In working out a strictly modern functional design for a theatre interior, where eye interest depends less on ornamentation than on the shape and texture of surfaces, it might be well to decorate in large masses of contrasting color. The nature of these colors and their use depend on the size and shape of the theatre, on whether it is desirable to emphasize warmth or coolness, and on whether an objective is to make the sidewalls of a too-wide theatre appear closer together, or those of a too-narrow theatre seem more distant.

When selecting colors for the theatre auditorium, it is, of course, necessary to choose hues which will not reflect light from the screen. Sometimes a slight change in color makes enough difference to cause or prevent light reflection. For example, a very bright, light pink on the walls would set a gay mood and appeal particularly to the element, but it would also reflect screen light; however, a dull pink, which would also please feminine patrons, would not do so.

Inviting Tones in Rest Rooms

The appearance of rest rooms can be improved by: pastel colors on walls and ceiling to give a fresh, clean look; vitreous ceramic mosaic tile or a resilient tile flooring, such as asphalt, cork, or rubber in colorful designs; and plenty of mirror areas to impart brightness and sparkle. The color scheme should be of vigorous tones for the men's room and soft, light shades for the powder room. The latter, especially, calls for an atmosphere of luxury and charm to which furniture, upholstery, and decorative fabrics should all contribute.

Restful Shades in Lounges

As far as lounges are concerned, the furniture, decorative fabrics, accessories, floor coverings, and background colors must be harmonized carefully in a related color pitch to create interest. A distinctive example is the basement lounge of the Paris (referred to previously). Chief color decorations there are provided by wallpaper with scenic etchings on a brown background, gray carpeting, and natural-finish chairs and tables which all combine to create a hospitable and restful atmosphere. At the far end of the lounge is a compact kitchen where refreshments are prepared for patrons, and in that corner also are the telephone booth and entrance to the powder room.

Example of Other Applications

The architect's advice cannot stop at the functional layout but should extend to everything that relates to the theatre, including uniforms, murals, draperies, etc. A clear example is the work of William Lescaze, architect for the Calderone, Hempstead, Long Island, N. Y.

Here, as in every theatre, the underlying idea was to get across a feeling of festivity. The vibrant, gay interior scheme uses the simple technique of clear colors over large areas. Visitors

are subjected to an immediate impression of spaciousness and visual stimulation through the use of tall mirrors opposite the entrance and a 60′ lobby mural of inlaid mosaic tile.

The 2,436-seat Calderone was given an unusual interior treatment by concealing the structural columns along the side walls of the auditorium with surface panels which extend from the inside of one column to the next. They provide logical color spots as well as ideal locations for side lighting. The walls were finished in plaster on metal lath, and acoustical plaster was laid on the alternate panels. A vibrant decorative note was struck by using Hawaiian koa wood, which also provides strong acoustics, in the door-high wainscoting.

A theatre's chief center of interest, the proscenium arch, should be given plain treatment, for it is naturally the cynosure of the audience and needs little further embellishment. This principle was carried out at the Calderone with fiberglas curtains to achieve a softening effect.

THE ROLE OF LIGHTING

Although theatre lighting is a matter in which an engineer's knowledge of location and intensity of illumination must be called upon, skillful coordination of color with lighting is required to make the latter genuinely effective. These two elements are absolutely inter-dependent, so any discussion of design and color coordination must perforce include a study of the fundamental importance of lighting in the artistic scheme. Its undeniable influence may perhaps best be illustrated by an examination of two theatres where lighting techniques have been aptly used to enhance color and vice versa.

At the Calderone

Just as we saw above how the Calderone typifies excellent usage of color in the creation of a festive atmosphere entirely suited to a structure whose main purpose is the furnishing of entertainment, so it also provides a striking example of how lighting may be combined with color and form to accent a mood of gaiety, which every theatre is essentially bent on achieving.

An immediate brilliant impression is obtained by massed downlights in the soffit of the marquee at the entrance. Inside near the entrance closely-spaced downlights are used for the attraction value and stimulating effects of high-intensity lighting. As one proceeds into the interior, the down lights are spaced farther and farther apart. Through the inner section of the lobby the intensity of light is gradually cut down to make the change in lighting intensity easier on the eyes of patrons walking from outdoors to the inside. An artistic touch is found in the spotlights recessed in the blue ceiling to simulate stars in the sky.

The marquee lights are 150-watt R 40's, but they can be raised to 300 watts with the same wiring. The lobby downlights have R-40 lamps which project ½″ beyond the fixtures, so that the ceiling receives some of the light.

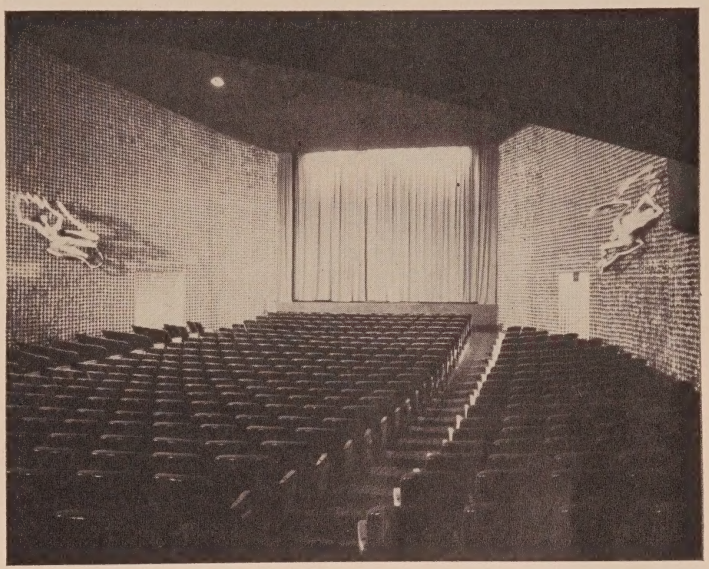
Cheerful, soft lighting is provided in the inner lobby to build up a change of atmosphere. This space is two stories high with a mezzanine lounge. Illumination comes from large circular units with shallow domes recessed in the ceiling and light sources concealed around their edges.

The diameter of the domes is 6′4″. Those over the two-story area use a dozen 40-watt fluorescent lamps each, while the mezzanine domes use six 40-watt lamps. A reversed cove in the wall of the mezzanine lounge uses a single row of 40-watt lamps.

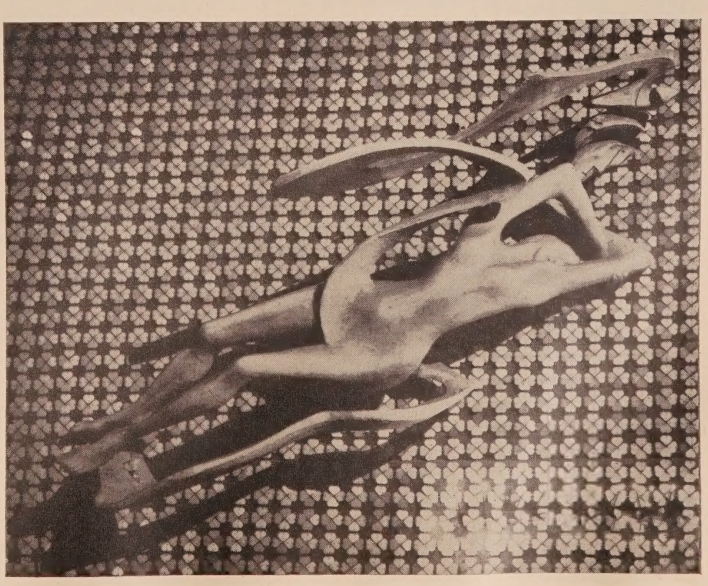
Incandescent downlights are spaced throughout the ceiling of the auditorium to provide general lighting. These are supplemented by fluorescent strips in a vertical position back of the overlapping edges of the five great wall panels along each side of the auditorium.

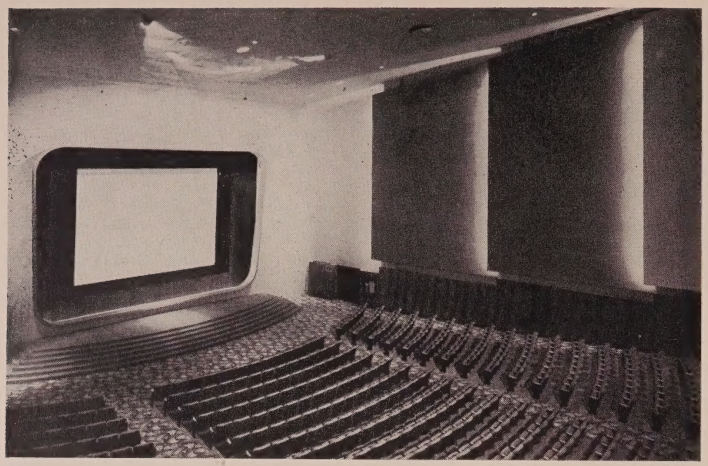
The forward portion of the ceiling contains floodlighting units mounted in streamlined housings that are part of the plaster ceiling itself. These lights project forward and inward toward the center line of the auditorium to light the wall surrounding the screen frame and the gold-colored curtain when it is drawn.

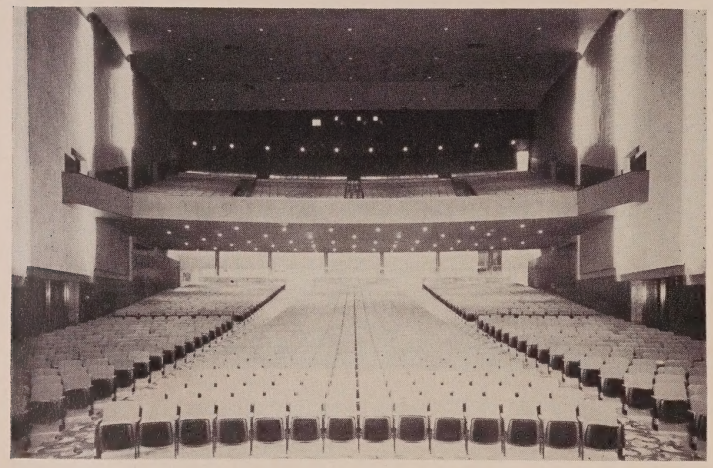
The standee space at the rear of the



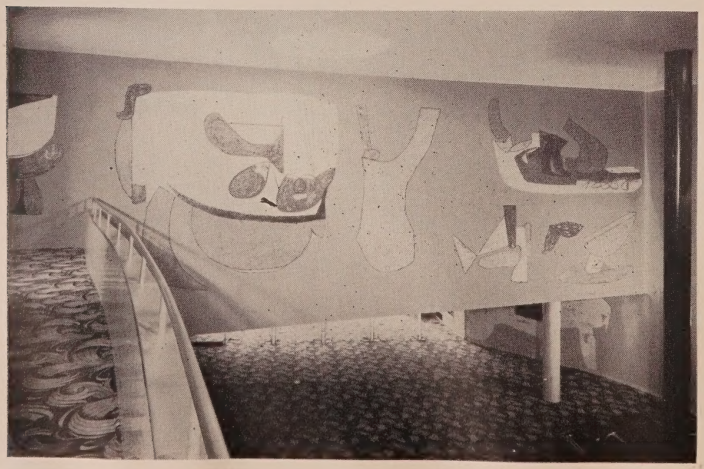
A RESTRAINED SHIMMERING EFFECT has been created in the auditorium of the Victoria, N. Y. C., by wall decorations of satiny aluminum fabric with sculptured figures by Gwen Lux.







A SERIES OF ARCHITECTURAL PLANES above a wood veneer wainscot, the walls in the auditorium of the Calderone, Hempstead, L. I., N. Y., are each done in a clear, bright tone of green, red, yellow, or blue, and are indirectly lighted by strip coves in the top photograph. ABOVE: Downlights are spaced out in ceiling and under balcony. BELOW: Lobby mural colors are reflected by the mirrored walls.



auditorium on the ground floor has a fluorescent cove strip, and there are incandescent downlights recessed in the soffit under the balcony.

Lighting strips with incandescent lamps on 6″ centers are mounted vertically back of the sides of the screen frame and horizontally back of its top. These lamps are red and yellow alternating.

At the Paris

The Paris, New York, furnishes another example of good lighting which provides, in conjunction with a suitable color scheme, an appropriate setting for relaxation and enjoyment.

Entrance lighting is brilliant but not harsh. The translucent glass marquee is lighted from the back to silhouette the lettering of the name of the current film and script letters above the marquee spell out the name of the playhouse in white neon. The white plaster underside of the marquee, features recessed units with incandescent reflector lamps to furnish a glow which brightens up the sidewalk.

Past the entrance and above the ticket booth is a trough lighting fixture of white porcelain enamel finish. In this glass trough are two rows of incandescent lamps, one row outside of the glass screen and the other on the lobby side. These lamps provide a flood of pleasing indirect lighting, and since there is both upward and downward (reflected) light, the glass is practically unseen.

Recessed in the lobby ceiling are direct downlighting units to supplement the soft illumination from those in the soffit of the marquee. The orchestra promenade is situated beyond the lobby, and the lighting arrangement varies sharply for this transition. Fluorescent lamps are installed in a strong line in a cove at the edge of a dropped part of the ceiling.

Auditorium lighting is only for the purpose of furnishing necessary illumination during intermissions. Under the balcony in the rear are incandescent lights recessed in the balcony soffit. At the bottom of these units is a circular baffle or diaphragm to furnish the needed 45° cut-off. Especially useful for sections with low areas (8′6″ or 9′), these units are spaced about 6′ or 7′ apart with 100-watt lamps. a dimmer control system is used for the lamps, so that they can be turned down while there is a picture on and turned up again for intermissions. About the balcony are recessed downlights in the ceiling with 150-watt incandescent reflector lamps on dimmer control.

The ceiling auditorium just beyond the front line of the balcony has a row of recessed downlighting units of 300-watt incandescence each. Baffles, set one above the other, prevent the lights from appearing too bright in contrast with the ceiling. There is also a small incandescent lamp of 15 watts in the side of each unit to furnish low-level illumination while the picture is on.

No lighting equipment is installed in the main portion of the auditorium ceiling forward of the balcony, in accordance with the plan that all sources of illumination in the auditorium be as unobtrusive as possible. Illumination for this section of the auditorium, therefore,

comes from the curved footlighting trough at the edge of the platform in front of the screen. Light is projected upward to the ceiling, as well as upon the curtain, from this point.

All lighting sources in this theatre are concealed with downlights recessed and the best possible cut-offs obtained by the proper equipment. Equal care is also taken to furnish upward lighting from concealed sources with similarly satisfactory cut-offs. As far as the footlights are concerned, proper precautions were taken to prevent a glare when the desired illumination is thrown on the ceiling. Lighting engineers achieved this end by plotting the sight lines from various points in the balcony to the footlight trough, thus assuring a proper cut-off.

The combination of downlights and uplights in the Paris auditorium has resulted in a luminous atmosphere which helps to create a feeling of space and repose.

CHOICE OF MATERIALS

The actual selection of materials for theatre design cannot be treated in general terms, as it grows naturally from the broad design plan under development. The range offered is wide, and application is a matter of imagination and personal expression. The broad underlying principle is that good materials should combine interesting colors. Most people entering the auditorium have their eyes primarily on the screen, not on the walls. The greatest problem centers, therefore, in the lobby and interior rooms, rather than in the main auditorium.

In the Laconia

A shrewd choice of building and decorative materials, in cases where it is desirable, can help to make a small lobby appear much larger, as in the modernized Laconia, Bronx, N. Y. Architect Seymour Joseph installed glass doors and a transom the full width of the lobby (fully visible from the street), thus making it appear much deeper. A dramatic lighting effect was created by cold cathode tubing from the ceiling to the marquee, an arrangement which also adds to the illusion of greater space.

The interior was completely repainted in a pastel green and the auditorium walls covered with a pink and green fabric furred out over the old absorptive material. A further touch of color was added to the exterior by wall-facing material of forest green structural glass with horizontal aluminum members for support and design.

In the Victoria

An ingenious use of materials was made at the Victoria, New York, by Architect Edward S. Stone. This shoddy old legitimate playhouse with 713 seats was remodeled and 335 seats added. A chief feature in an aluminum-mesh curtain for the walls of the auditorium, balcony, and gallery. This is a fabric formed of pear-shaped scrap-aluminum stampings from film-reel holders, threaded and clipped onto narrow, flexible metal tape, and applied to wood blocking. Monotony is broken up by sculptures along the side walls and candelabra at the rear of the auditorium.

Advantages of this novel treatment are: (1) economy in saving expenses of scaffolding, plastering, and painting by leaving an unfinished aluminum mesh wall. The architect was able to use bare cinder blocks for new wall areas and ignore the old grill openings and minor breaks; (2) good acoustical properties, since the material is porous; (3) unique decorative effect; (4) improved lighting. A satiny aluminum wall fabric picks up reflections from screen, and in the case of Technicolor films, color is reflected back from the walls to bring the action into the theatre more.

Predominant color for the interior is an opera red appearing in the carpeting and the seat coverings. The ceilings of the foyer and marquee are continuous and covered with closely-spaced low-watt bulbs. A distinctive feature of the foyer wall is a full-length mural which is changed to conform to the current film offering.

In the Central

Economy without compromising quality is exemplified in the new 600-seat Central, Central Islip, Long Island, N. Y. The problem of Architect Maurice D. Sornik was chiefly that of physical shape. The theatre narrows down from a 60′ front to 40′ at the screen end. Sornik's solution was to reduce the width of the screen instead of projecting parallel walls.

He thus accomplished two objections: (1) good acoustics without use of expensive sound-absorbing materials on the sidewalls; and (2) proper reflection on the screen and elimination of aisle lights on the chairs (an even intensity of light throughout the house because of the narrowing walls obviates the need for them).

The facade is of concrete blocks in stone ashlar design, while a colorful California redwood flagstone lobby floor further contributes to the rustic atmosphere appropriate to the location. The foyer areas are of Philippine mahogany.

Gray and chartreuse are the basic colors used throughout the house. Walls are of flameproof damask in these tones, while the carpets are red and gray. The lavatories have glazed ceramic tile walls, vitreous tile floors, and acoustical ceilings.

Miscellaneous Types

Other types of modern materials enable the theatre operator to plan construction of a new theatre with economical expenditures for ornamentation. A new interior finish wallboard has a new tone-on-tone color treatment (devised by Ketcham) which gives depth to the colors, reduces reflections, creates a note of luxury, and introduces a material of acoustical value.

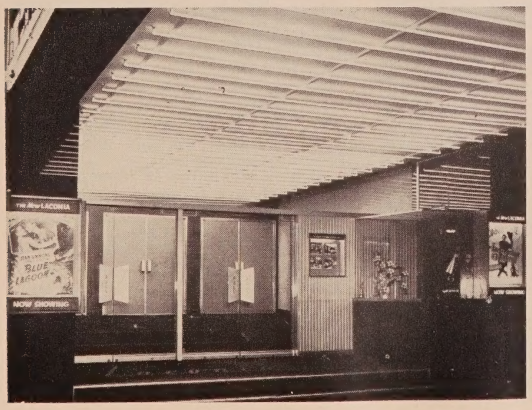
Similarly asphalt tile, a popular floor covering, can be applied with equal effectiveness to walls or wainscoting. Such wall treatments as these provide definite economy in the elimination of painting, decorative wall designs, and draperies.

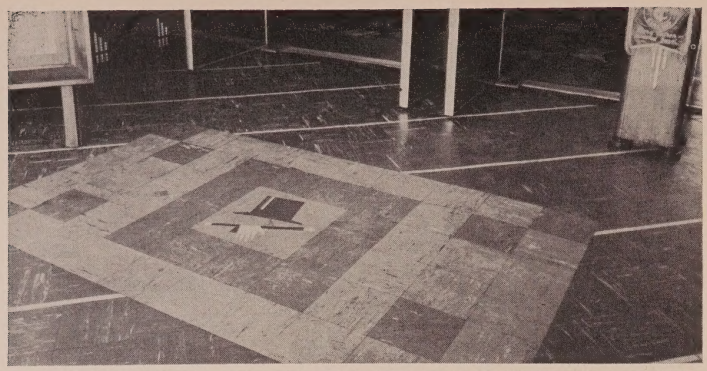
Finally, modern fluorescent dye colors, used for upholstery on the rims of aisle seats, will aid the progress of those who enter the theatre while it is darkened.

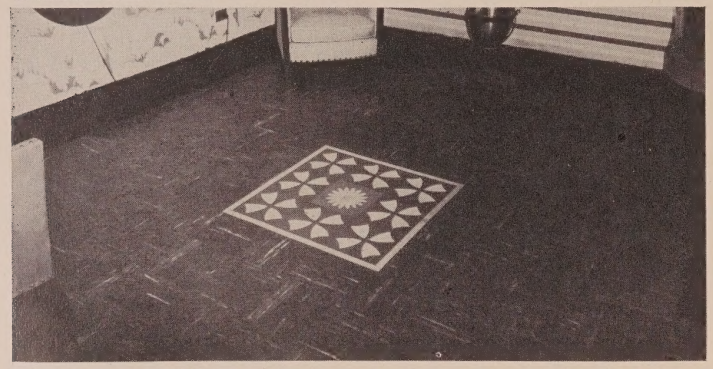
FLOOR COVERINGS

When a suitable floor covering for any one area of the theatre is considered, the activity which is to be carried on in

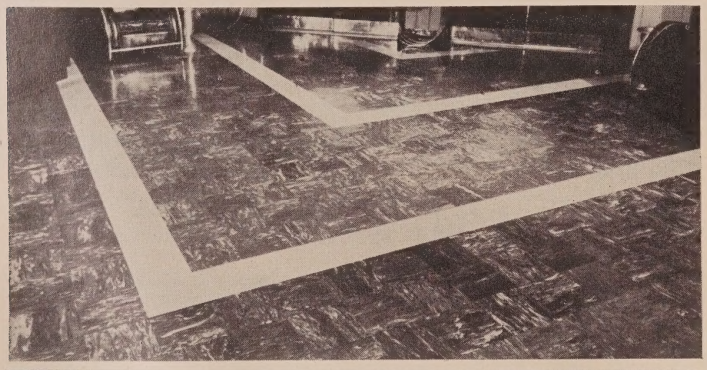
COLD CATHODE TUBE LIGHTING has been installed on the plastic ceiling under the marquee of the remodeled Laconia, Bronx, N. Y. C. All-glass doors and box-office add to visual impression. Candy bar has a peppermint-striped facing on a lined oak and enameled wood showcase with glass.

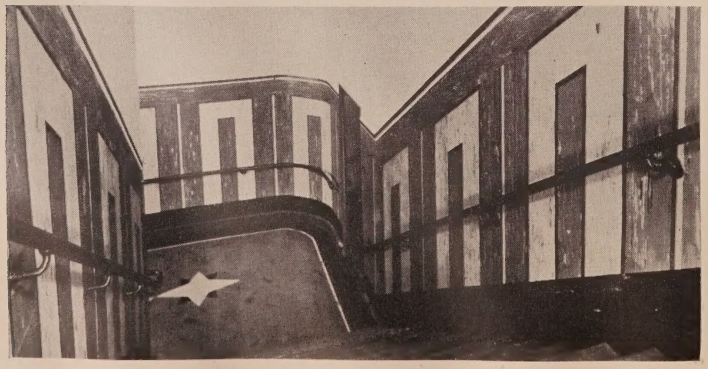






PRACTICALITY OF ASPHALT TILE for theatre use is shown in above views of lobby and ladies' lounge of Trylon, Forest Hills, L. I., N. Y. BELOW: 1. Rubber tile flooring in lobby of the Hobart, Woodside, L. I., N. Y. 2. Asphalt tile on wainscoting of stairway in Loew's National, Bronx, N. Y. C.





that area will influence the choice of the material best suited for it. In concentrated high-traffic areas, such as the lobby and foyer, concrete and terrazzo prove to be of practical advantage. Cork tile may be used in the auditorium, rubber or ceramic tile in rest rooms, and asphalt tile or linoleum in lounges. A proper selection, however, must carry out the principal objective of theatre design—functional estheticism.

Concrete and Terrazzo

Concrete is perhaps the most favored of all materials for use in the heavy traffic areas of the theatre, but terrazzo is also ideal for this purpose with its durable qualities. Furthermore, in the interests of decorative appeal, it has novel design possibilities of a pictorial or geometric nature in any combination of colors.

Asphalt Tile

This type of floor covering has been steadily growing in favor for theatre use because it embodies a number of qualities which make it particularly suitable for this purpose. First of all, its decorative and design possibilities are almost endless; Kentile asphalt tile, for example, is available in 25 different colors. Special tiles with insets of letters and designs are helpful in marking off sections and rounding out a decorative scheme.

Furthermore, the non-slip qualities of asphalt tile provide a priceless accident preventive, while maintenance is reduced to a minimum; all that is required to keep it clean is a washing with mild lukewarm soapsuds.

Cork Tile

Cork tile flooring, such as Kencork, is of particular advantage to theatres because of its high acoustical properties. The air-filled material helps make the interior virtually soundproof with footsteps practically inaudible. In addition, it has a high safety value because it is skid-proof. There is no danger of persons slipping or sliding on the surface when they come in from wet streets, since cork "grips" anything pressed against it.

From the decorative standpoint, cork tile flooring rates high because beautiful effects can be achieved with random shades ranging from oak to walnut—rich coloring which blends well with any design plan and creates an air of luxury.

Rubber Tile

Rubber tile flooring has a cushioning resiliency which provides comfort and quiet underfoot. This material acts as a shock absorber and a muffler of sound—qualities greatly valued by both management and patrons.

Kentile rubber tile, for example, comes in 15 colors with delicately-veined and marbleized effects to make it highly adaptable to decorative floor designs. Pictorial inserts in this material provide a further opportunity to individualize the theatre floor, and inch-wide feature strips can be used to add variety. Linoleum, available in roll form, tiles, and in borders with individual motifs has, like rubber tile, a wide range of colors which make harmony with any decorative scheme possible.

Table I—Compatible Color Groupings that may be combined with safety in any decorative effort:

Red Aqua Leaf-green Beige	Vermilion Chartreuse Turquoise or aquamarine Beige	Orange Aquamarine Purple Ivory	Red Plum Turquoise or aqua Lettuce green	Orange Blue Plum Beige	Henna Sky blue Turquoise
Blue Orange Butter yellow	Peach Violet Turquoise or aquamarine Beige	Raspberry Black and white Green	Blue Orange Violet Lime	Yellow Plum Lilac	Brown Orange Yellow Red
Peacock blue Red Plum Ivory	Plum Peach Lime Ivory	Green Vermilion Orange-yellow	Blue-green Light plum Yellow	Forest green Red-plum Purple Beige	Blue-green Magenta Sky blue Yellow
	Forest green Red-plum Blue-plum Peach	Red White Green Black	Chartreuse Royal blue Coral pink	Cherry red Laurel green Brown Beige	

Carpeting

Carpeting is used to provide decorative, as well as sound-deadening, effects throughout the theatre. The proper selection of carpeting may be the key factor in determining the success or failure of an interior color design plan. It should express the dominant color of the area, and may be used as the focal point of a color scheme which employs contrast through complementary colors, or those most closely related in the spectrum; interest is furthered by varying the intensities.

Carpet colors must also contrast with the tones of surrounding areas. For instance, if foyer carpeting is a brilliant red, the surrounding walls and ceiling require subdued colors to offset the brightness. If carpeting in the lounges adjoining the foyer is of a secondary color, such as green, their walls and ceilings should be in more chromatic tones for contrast.

SUMMARIZED COLOR GUIDE

Each colors has a character or quality of its own. Colors carry impressions of luminosity, vibrance, warmth, or coolness and are as important in producing decorative harmony as the roles of the actors in a drama. While a color's own special tone can be modified, it cannot be thoroughly eliminated. Therefore, theatre operators should be familiar with the characteristics of the primary colors, **red, yellow** and **blue,** and the secondary ones created by a mingling of the primaries.

Mixtures of red and yellow produce orange; those of yellow and blue result in green; and combinations of blue and red create violet. Many gradations of each mixture are possible, and each variation is called a hue. The addition of white to any hue lightens it to a tint of the hue, while black darkens it to a shade of that hue.

Complementary colors are dissimilar and farthest apart in the sequence. Color harmony is accomplished when two or more colors are so arranged that when viewed simultaneously they are pleasing to the eye.

Impressions of Color

Red—most intense and warmest of all colors. Too strong to use alone, as are all the primary colors, it will give life and vigor to any decorative arrangement. It is generally used either in hues of the plain color, or as a dominant shade. Red gives vigor and character to draperies and upholstery fabrics and is also effective as an accent color.

Yellow — creates an atmosphere of good cheer. It is the best reflector of light and a popular wall color. Effective in combination with darker colors, yellow is favored in drapery fabrics and important accents.

Blue—the most restful of all colors. Its use has the effect of making an interior appear larger. When combined with orange, its complementary color, it is dramatic. It can also be combined with the hues which lean toward the red, that is the reddish violets.

Green — nature's color, restful and soothing. Between the yellow-greens with their warm vibrancy and the rich coolness of the blue-greens lie gradations of hue which add to the color range at the disposal of the decorator. It is a favored wall color, especially in the yellow-green tones.

Violet—used sparsely in its pure tone in the decorative scheme. Violet tones like raisin, mulberry, and eggplant are, however, employed to lend dignity.

Orange — a combination of red and yellow. While popular, it is limited in use. Orange is, however, particularly effective when used with the complementary blues.

A detailed color chart with gradations of tone would show yellow, yellow-orange, yellow-green, green, blue-green, blue, blue-violet, violet, red-violet, red, red-orange, orange, and yellow-orange in that order.

Warm and Cool Colors

Decorators divide colors into two categories — warm and cool. The former group is made up of sharp, chromatic shades, such as red and yellow; cool colors are blues, blue-green, violets, and their variations.

Warm colors are used for stimulating effects and to make an area seem cheery and warmer. Warm colors should be used in a section of the theatre which is cool and somewhat dreary, while cool colors should predominate in a warm and sunny area.

Since warm colors appear to "advance" toward the eye, they are recommended for larger sections where it is desirable to make the walls appear nearer and smaller; cool colors, on the other hand, appear to "recede" and "push" the walls back. The same principles can be applied to individual objects, such as chairs or tables.

Theatre decoration makes strong use of contrasts to increase emphasis and avoid monotony. This effect can be obtained by complementary colors which, while different in feeling and opposite each other on the color wheel, do not clash but supplement each other.

A warm color like yellow, for example, will appear well in contrast with an opposing dark blue. A series of contrasting color combinations can be worked out by spinning an easily obtained color wheel to determine the complementary colors opposite.

A typical case in point will serve to illustrate the above. If a lobby flooring is blue, a complementary color will be needed for the walls. On the color wheel, blue's opposing, or complementary, color is an orange hue—yellow-red. Therefore, any orange tints, such as light peach, can be used to complement the blue floor.

Acknowledgment

The Editors of THEATRE CATALOG wish to express their gratitude to the American Society of Interior Design for furnishing the material contained in the foregoing article.

Behavior of Acoustic Materials*

A Review of Popular Sound-Absorbent Substances And Factors To Be Considered in Their Selection

By Richard K. Cook
Chief, Sound Section, National Bureau of Standards

BRIEF: *Theatre architects . . . and engineers . . . need accurate data on the performance of acoustic materials . . . which are used to control the acoustics of theatres . . . Descriptions of prefabricated materials . . . and acoustic plasters . . . are given in the following article . . . and the mechanism of the sound-absorption process in porous materials is briefly described below.*

There are two commonly used absorption coefficients—the "random-incidence" coefficient . . . and the "normal-incidence" coefficient . . . The experimental methods used for measuring the two coefficients are outlined . . . The significance . . . and limitations . . . of these coefficients in theatre design are pointed out . . . and it is concluded that . . . at the present time . . . the random-incidence coefficient is more useful in auditorium design.

Recommendations for painting acoustic materials are also made . . . and illustrations of the results of painting are included.

The control of the acoustics of auditoriums and theatres, and the quieting of noisy rooms, both require the installation of acoustic materials. By an acoustic material is usually meant a sound-absorbent substance which is fastened in flat patches to the walls and ceiling. Recently, however, some absorbers have been fashioned in the form of cylinders, cones, and spheres, and have been suspended at a distance from the walls and ceiling of the room.

REVERBERATION

Modern building materials and techniques lead to hard, smooth interior walls that are notoriously poor sound absorbers. After a source of sound, for instance a speaker's voice, is suddenly stopped in a room with hard plaster walls, the sound does not stop immediately. Rather, it is reflected from wall to wall, only a small fraction of its energy being absorbed at each reflection, until eventually the energy is so far reduced that the sound becomes inaudible. This persistence of sound after the source is stopped is called reverberation, and the time required for the energy of the original sound to decay to one millionth of its original value is called "the reverberation time" of the room.

Disadvantages

Excessive reverberation is common and a serious defect in many churches, theatres, offices, and factory rooms. Conversation in reverberant rooms is annoying. Preceding speech syllables overlap succeeding syllables and, if the reverberation time is very long, conversation becomes extremely difficult.

Advantages

Reverberation, however, is not without its benefits. The reinforcing effect of reverberant enclosures can actually serve to enhance speech and music, provided the reverberation time is held within certain limits. The acceptable limits for speech are from ½ second for small rooms to approximately one second for large rooms.

FUNCTION OF MATERIALS

The principal function of acoustic materials is to absorb sound energy which originates within the room. It is possible to predict in advance of construction, or remodeling, the amount of such material that must be placed in a given room to obtain the optimal reverberation time.

Absorbent Qualities

Acoustic materials have the ability to absorb much greater fractions of the energy of the sounds incident upon them than do ordinary plaster or masonry walls. In a room with walls treated with such materials, a sound wave undergoes many fewer reflections before it becomes inaudible.

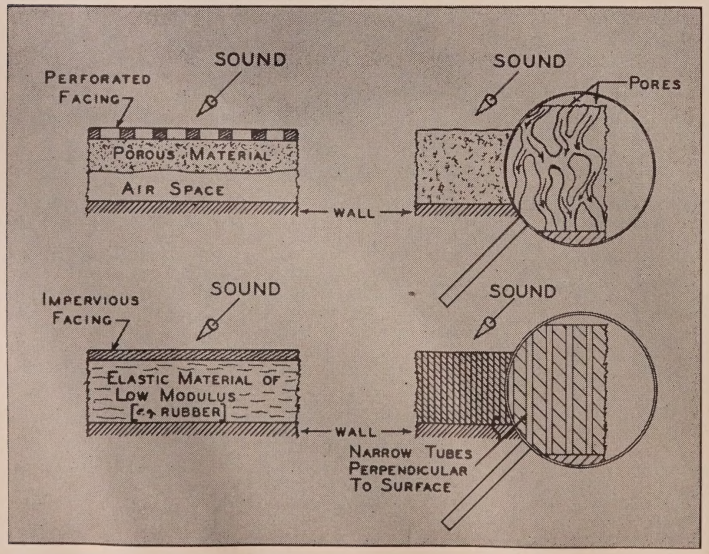
Choice of a Type

Architects and engineers are faced with the problems of deciding what material should be used in an auditorium to secure the proper amount of sound absorption, and deciding what is the most economical absorbent to quiet a noisy location. It is clear that they must have accurate data on how acoustic materials absorb sound. Such data have been available for many years.[1] However, the special uses to which a material is put will in general require more detailed information than can be obtained from the results of routine laboratory tests. Nevertheless, the results of such tests are of great importance to the theatre engineer, and he should understand their significance and limitations.

DESCRIPTION OF MATERIALS

There are two main kinds of acoustic materials. One kind is prefabricated, a familiar example being the one-square-foot tiles which are commonly used in many public places. The other is the kind which is manufactured, so to speak, at the moment of application, and includes acoustic plasters and sprayed-on fibrous materials.

FIGURE 1—Some types of acoustic materials.



*A revised version of a paper originally presented October 24, 1947, at the Society of Motion Picture Engineers Convention in New York and published in the Journal of the S.M.P.E., August, 1948.

Prefabricated Types

Prefabricated acoustic materials are sold in the form of flat tiles or boards that are applied to the walls of a room. They may be cemented directly to the wall or ceiling by means of "acoustic cements" made especially for the purpose, or they may be nailed to furring, or supported on suspension systems. Frequently the edges of tiles are kerfed for the reception of splines, which assist in the alignment of the tiles to a true flat surface.

Oftentimes, however, the architect requires that the acoustic treatment be applied in broad areas, unbroken by visible tile or board joints. Acoustic plasters and sprayed-on materials lend themselves admirably to this purpose.

There are various types of the prefabricated kind. A common type is the homogeneous porous absorbent consisting of wood fibers, or glass fibers, or granulated material, held together with a suitable binder. Another common type is the porous material having a hard, nonporous surface which is perforated (Fig. 1) so that the sound waves can pass into the porous region and be absorbed. The perforations might be regularly spaced slots, circular holes, or irregular fissures.

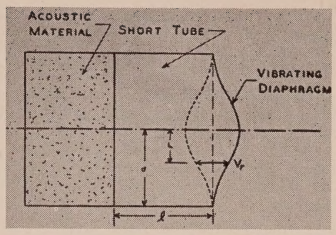


FIGURE 2—Impedance tube for measurement of normal-incidence absorption coefficient.

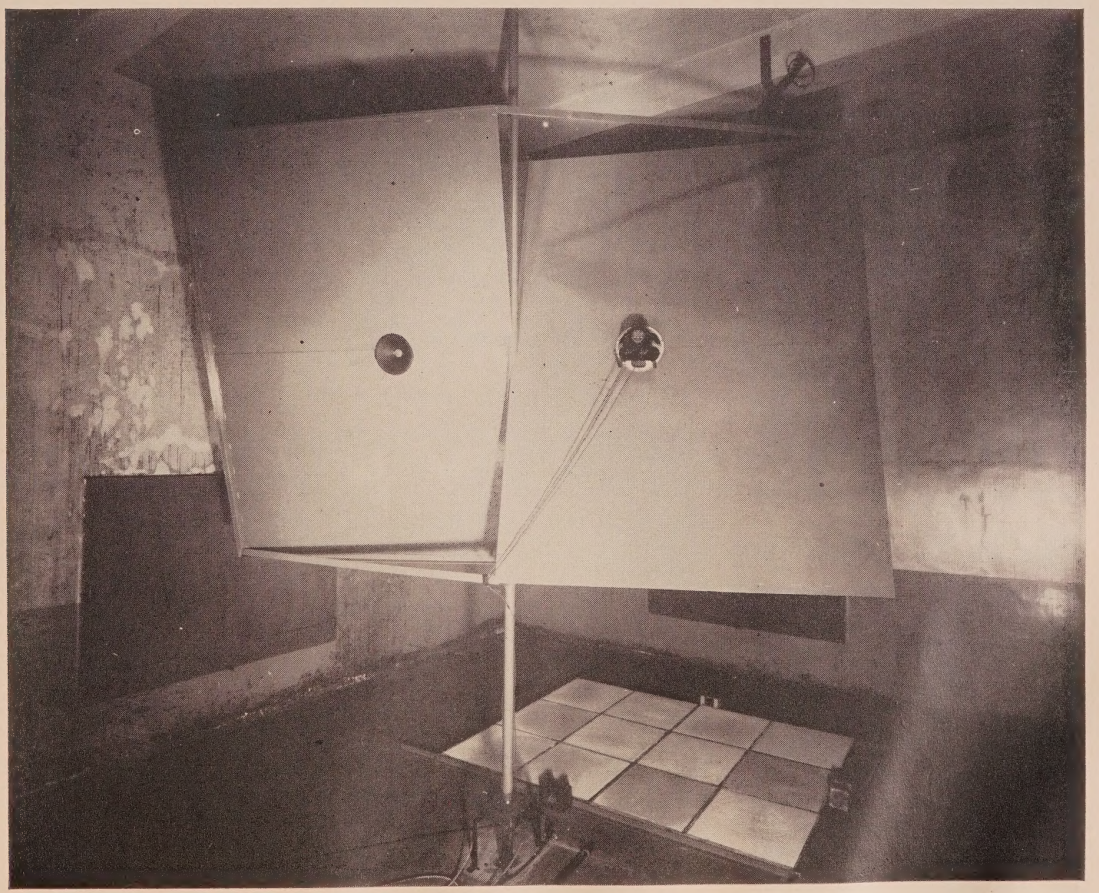
The perforations range from 1/16 to 1/4 inch in diameter, or width, and extend deeply into the material. As long as the total area of the perforations is greater than 10 per cent of the total surface, the surface of the material behaves as if it were transparent to sound. The effect of the perforations is the same as if a much greater surface area of the material were exposed to the sound.

Another type is the porous material installed in blanket form, such as glass wool or rock wool, and protected by a perforated surfacing of wood, metal, or asbestos cement board. The principal advantage of the prefabricated acoustic material lies in the uniformity of the product. The manufacture can be carefully controlled, and, in general, there are relatively small variations in the absorption coefficients for a particular type.

Acoustic Plasters

Several different types of acoustic plasters are available. Some consist of granulated inorganic substances which are mixed with a foaming agent and a suitable binder, and are applied with a trowel. Sometimes the plaster is stippled (in order to improve the absorption of sound) before it has set hard. Other types consist of fibrous material, usually rock wool or asbestos, which is mixed with a binder and sprayed directly on to the wall by means of special equipment. Acoustic plasters are generally difficult to handle, and careful control must be

FIGURE 3—National Bureau of Standards reverberation room. Used for measurement of random-incidence absorption coefficient.



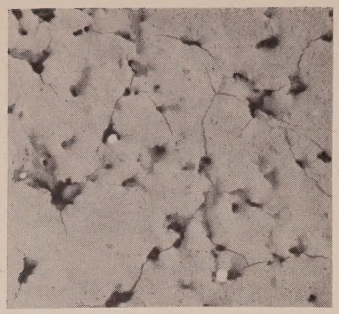


FIGURE 5—Fissured surface of a porous acoustic material.

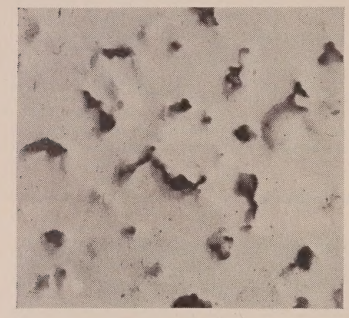


FIGURE 6—Same material as in Figure 5 after application of four coats of brush-applied paint.

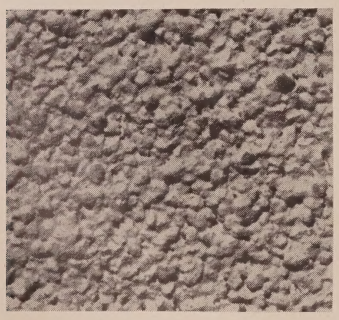
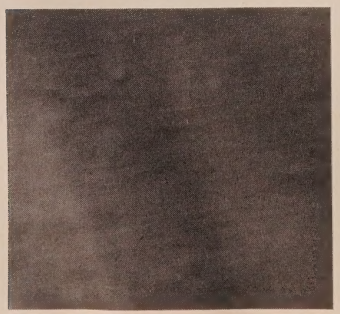


FIGURE 7—Granular surface of a porous acoustic material.

FIGURE 8—Same material as in Figure 7 after application of five coats of brush-applied paint.



exercised when they are applied. Occasionally, however, there are economic advantages in favor of plaster and sprayed-on materials.

A third kind of acoustic material has been used in Europe, and consists of sponge rubber having a low modulus of elasticity, and covered with a thin impervious skin. Such absorbents do not seem to be commercially available in this country.

Other Absorption Methods

It should be pointed out here that there are additional ways of securing sound absorption in a room, besides the use of acoustic materials. For example, thin panels of plywood or similar material, not exceeding approximately one-quarter inch in thickness, mounted on frames with an air space between the wall and the panels, can have a considerable amount of absorption at low frequencies. Details of this and other types of sound-absorbent constructions as well can be found in the recent book, "Acoustical Designing in Architecture," by Vern O. Knudsen and Cyril M. Harris (John Wiley & Sons, Inc., New York, 1950).

Mechanism of Absorption

Acoustic materials can also be classified by the way in which they absorb sound (Fig. 1). A knowledge of the mechanism of absorption is important, especially if one is going to be faced with the problem of painting the material, or keeping it decorated. In almost all cases, the absorber is porous, and the absorption of sound is due largely to the viscous damping of the motion (caused by the incident sound) of molecules of air in the pores. In the absence of any other absorption process, a porous material can absorb sound only if its interior is permeated by interconnecting pores and voids, and if the surface is open to permit direct access to the interior. Some cellular materials like foamed glass do not absorb sound readily because the voids are completely isolated from one another by the walls of the cells so that air cannot pass from one void to another.

Sometimes the absorption process is aided by vibration of the porous material itself. In addition, the propagation within a porous material is influenced by the tortuousity of the channels (see the sketch to the right in Fig. 1) and by thermal effects. In fact, it is difficult to say which absorption mechanism predominates in a given porous absorbent without conducting a complicated investigation as to how sound is propagated through a material. The sponge rubber described earlier absorbs sound by frictional damping in the rubber. Oddly enough, some very soft and porous fibrous materials, after being covered with an impervious layer of paint, behave like sponge rubber. As a general rule, however, it is very important to preserve the porosity of an absorbent. Painting is, therefore, difficult. This point will be further discussed later.

MEASUREMENT OF ABSORPTION COEFFICIENT

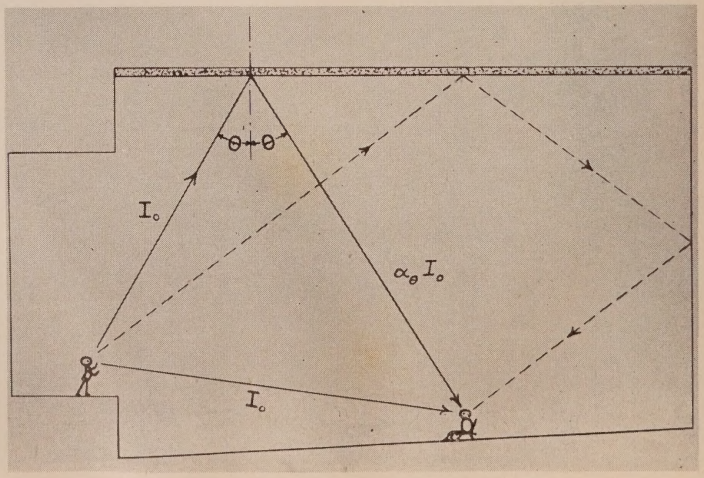
A number of elements are important in the choice of an acoustic material. The user is interested not only in sound absorption, but is also concerned with light reflection, fire resistance, appearance, strength, and paintability, all of which are important. However, we shall discuss only the measurement of sound-absorption coefficients, and the influence of painting on acoustic properties.

Important Factors

Suppose a beam of sound waves is incident upon an acoustic material. The beam carries power. The absorption coefficient is the fraction of the power which is absorbed. For example, if a material absorbs 65 per cent of the sound power incident on it at 512 cycles per second, the absorption coefficient at this frequency is 0.65.

Measurements of absorption coefficients are usually made at frequencies of 128

FIGURE 4—Simplified geometrical acoustics of an auditorium having a sound-absorbent ceiling.



cycles per second and its octaves up to and including 4,096 cycles per second. By custom, acoustic treatment for auditoriums and theatres is specified in terms of the sound absorption coefficient at 512 cycles per second, but there is a trend toward specification at additional frequencies.

An important point is that the absorption coefficient depends not only on the physical properties of the material, but also on how it is mounted. As a general rule, an air space between the absorbent and the rigid wall on which it is mounted enhances the absorption.

Measuring Techniques

Physicists and engineers have long struggled with the problems of how to define better and how to measure the absorption coefficient of a material. In Fig. 2 is shown a technique for measuring absorption when sound is incident normally, i.e., perpendicularly, to the surface. The source is a vibrating diaphragm located to the right in the diagram. The acoustic material is to the left. By measuring the sound pressure at the center of the surface, we can deduce, from a knowledge of the amplitude of vibration of the diaphragm, what the absorption coefficient is for sound at normal incidence.

Variations of the above technique have been used. Sometimes the standing-wave pattern in the tube is explored with a probe tube and microphone. The important thing is that the general idea is always the same, namely, we measure the absorption coefficient when sound is incident perpendicularly on the surface. The coefficient obtained in this way is called the "normal-incidence absorption coefficient."

The basis idea of the other technique which is extensively used for measuring absorption is to have the sound incident on the material from all possible directions. To achieve this, the material is placed on the wall or floor of a large, highly reverberant room. Sound of the desired frequency is introduced into the room, and the distribution of sound energy is "randomized" by any one of several ingenious methods. This means that sound rays strike the surface equally from all directions. When the sound field has become thoroughly randomized, the source is turned off, and the rate of decay of the sound energy is measured with microphones and a recorder. The absorption can be deduced from the measured rate of decay. The coefficient obtained with this technique is called the "random-incidence absorption coefficient."

In Fig. 3 is shown the 15,000-cubic-foot reverberation room at the National Bureau of Standards. The sample, which is usually 72 square feet in area, is on the floor. The loudspeakers which supply the sound are on the vanes. The vanes rotate while measurements are being made, and help to randomize the sound field. The microphones which pick up the sound are not shown.

Practical Applications

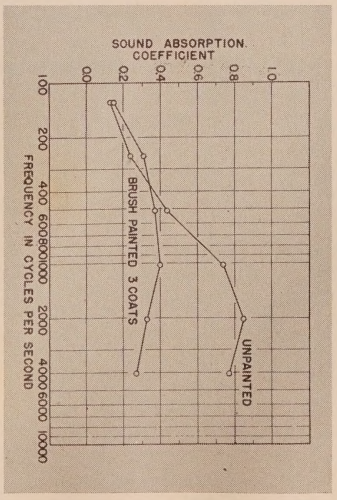
The important question is, how significant are the normal-incidence and random-incidence absorption coefficients in practice? As was pointed out earlier, the principal use of an acoustic material in an auditorium is for control of the reverberation time. Many years of experience seem to show that the reverberation time can be computed correctly if the random-incidence coefficient for the acoustic treatment in the auditorium is used in the calculations.

On the other hand, it is not really necessary to design a motion picture theatre for optimum reverberation time. The loudspeaker system can supply ample acoustic power, and hence large amounts of absorption can be, and usually are, installed in a motion picture theatre. Even though the normal-incidence absorption is more easily determined in the laboratory, it is still difficult, and in some cases it is impossible, to deduce the random-incidence behavior from laboratory measurements with normally incident sound. On the whole, the conclusion at the present time is that the random-incidence absorption coefficient is more useful in auditorium design.

Measuring Difficulties

Some of the difficulties involved in deciding how to measure sound absorption can be appreciated by referring to Fig. 4. The sketch shows that the listener receives sound which is non-normally reflected from the acoustically treated ceiling. If one wishes to compute the intensity of the reflected sound, neither the normal incidence nor the random incidence coefficients can be used! To make matters worse, the angle "θ" of the reflected sound is different in different parts of the auditorium. The object in pointing out these things is to indicate the limitations on the absorption coefficients when an acoustic material is being chosen for a theatre.

FIGURE 9—The effect of three coats of brush-applied paint on a typical acoustic plaster. The paint has caused a serious adverse effect on the absorption at high frequencies.



PAINTABILITY OF MATERIALS

Since the majority of commercially available acoustic materials depends on porosity for sound absorption, it is clear that painting will present a problem. There is always the possibility that excessive painting will clog the pores and prevent absorption of sound.

Perforated or Fissured Types

In the case of porous materials having a mechanically perforated or fissured facing, there is no serious difficulty. Paint can be applied so long as the perforations and fissures remain open.

Non-Perforated Kinds

The painting of a porous material without large holes or fissures is more difficult. The paint must be applied as thinly as possible, preferably with a spray gun. If it is brush-applied, care must be taken to thin the paint and to get it on the surface without closing the pores.

Non-Porous Types

The non-porous, rubber-like materials can be painted, provided the paint does not substantially increase the weight of the facing. Too much paint will reduce the absorption of sound at high frequencies.

Examples of Painting Effects

The effect of painting on some typical porous materials can be seen from the following data obtained from a paper by Chrisler.[2] Fig. 5 shows a fissured material which had a noise coefficient of 0.55 before painting. The noise coefficient is here defined as the average of the random-incidence absorption coefficients measured at frequencies of 256, 512, 1024, and 2048 cycles per second.

Fig. 6 shows the same material after it was brush-painted with four coats. The noise coefficient fell to 0.45 after painting, which is not a serious reduction. The reason for the success of the brush painting is that the material was fissured. The fissures which lead down into the porous material were not covered over, and a considerable amount of sound absorption remained after painting.

Fig. 7 shows a porous material consisting of organic and inorganic granules held together with a binder, and having a granulated surface. Before painting, the noise coefficient was 0.60.

Fig. 8 shows the same absorbent after five coats of brush-applied paint, when the noise coefficient fell to 0.25. This is a too-familiar horrible example of bad treatment of an acoustic material. The method of painting in this case should have been either with a spray gun, or with a thinned paint carefully brushed on so as not to close the pores.

Fig. 9 brings out the fact that excessive painting of a material has the worst effect on the sound absorption at high frequencies.

REFERENCES

(1) The results of tests made at the National Bureau of Standards have been published in its Letter Circular LC-870, "Sound Absorption Coefficients of the More Common Acoustic Materials."

(2) V. L. Chrisler, "Effect of paint on the sound absorption of acoustic materials," *J. Res. Nat. Bur. Stand.*, vol. 24, p. 547; RP 1298, 1940.

1950-51 Review of New Theatre Construction

A Pictorial Coverage of the Design and Structural Trends in Recently Opened, Award-Winning Theatres

Depicted on the following pages are a number of roofed theatres which, due to one or more outstanding features, have been selected by the Editors of THEATRE CATALOG for presentation in this 1950-51 Edition. Before discussing further the characteristics of these theatres, however, a few words should be said about a special badge of honor, first awarded to their 1949 predecessors, which will be bestowed on them also.

1949 Merit Awards

Shortly after the 1949-50 Edition of THEATRE CATALOG was published, the Editors decided that some sort of distinctive medal of achievement should be conferred upon those theatres which had merited pictorial treatment in the book. Accordingly, a large bronze plaque (see illustration on this page) was designed for presentation to each theatre for display in a prominent place. The owners or operators concerned were notified that they had been awarded one of these "Oscars" and requested to designate the party and the address to which they wished it sent.

The award was made in the names of both THEATRE CATALOG and the PHYSICAL THEATRE Department of its sister publication EXHIBITOR, on the basis of functional plan, showmanship, design and construction excellence in relation to the patronage the particular theatre was designed to serve. Out of the 450 roofed theatres and 1,000 drive-ins built during 1949, 37 of the former type in the United States, plus 4 in Canada, and 7 drive-ins in the United States were selected for this mark of distinction. The domestic awards were made on a completely national basis with the winners covering 13 states.

It was the hope of the Editors that the recipients of these plaques would capitalize as much as possible on the exploitational possibilities of the awards, and this wish was, in the majority of cases, admirably fulfilled. Enthusiastic letters and telegrams poured in from the theatre executives expressing their pleasure in the fact that their houses had been so honored and related the arrangements they were making for formal presentations of the plaques at cocktail parties, special dinners, and ceremonies on theatre stages.

Some conception of the efforts typical merit award winners put forth in order to impress upon their communities the importance of the honor accorded their theatres may be gained from the following examples. In Baltimore, for instance, Harry Myerberg, president, Crest, received the award from Maryland's Governor Theodore R. McKeldin on a television show over Station WMAR-TV. Richard Lochry, manager, Arlington, Indianapolis, received the award for his theatre at special ceremonies on the stage from Trueman T. Rembusch, president, Allied Theatre Owners of America. The set of 20th Century Fox's "You're in the Navy Now" was the site of the presentation of the plaque won by the Whittier Drive-In, Los Angeles, to Charles Caballero, president, Pacific Drive-In Theatres. The award was made by EXHIBITOR representative Paul Manning while Gary Cooper, star of the picture, looked on.

In every instance, the awards were given excellent coverage in local newspapers, and considerable community interest was aroused in the event. It is expected that the same effective publicity will accompany the award of these plaques to the 37 (30 in 22 states, 1 in the District of Columbia, 1 in Canada, and 5 foreign) first-class theatres built during 1950 which have been selected for pictorial treatment on the pages which follow.

BRIEF: ***Long one of the most notable features of THEATRE CATALOG . . . and the particular favorite of theatre designers and builders . . . the annual review of new theatre construction . . . presented on the following pages . . . now has added significance.***

In short . . . the 37 new structures pictorially treated in this volume will be the recipients of the same merit award . . . a handsome bronze plaque suitable for mounting on the facade or other important place . . . which was last year awarded to 41 roofed theatres and 7 drive-ins reviewed in the 1949-50 Edition.

This "Industry Seal of Approval" . . . which has already become a coveted honor . . . has brought invaluable publicity to the theatres so concerned . . . many of which held formal presentation ceremonies with important dignitaries and large crowds on hand to witness the occasion . . . It is a mark of distinction which the following best theatres of 1950 will also be proud to receive.

THE ANNUAL MERIT AWARD symbolizing the Theatre Industry's only "Seal of Approval."

New Theatres of 1950

Long before NPA Order M-4 halting any further new theatre construction was issued, a number of fine houses were constructed which incorporate the best in architectural ingenuity and scientific planning. In keeping with the axiom that a misfortune is somehow "a blessing in disguise," slipping boxoffice receipts in the past two years or so have exercised a powerful and beneficial influence on theatre design and construction.

The theme of satisfaction to the patron which has dominated these 1950 theatres has also been carried out in ways other than the provision of exquisite surroundings for his relaxation and enjoyment. For example, many of them incorporate television lounges where theatregoers may enjoy their favorite video programs while waiting for the show on the screen to start or at other times. Not only are these television lounges a real service to the customer, they are also a shrewd theatre answer to the threat of this new visual medium. By offering television facilities themselves, theatres may recapture some of the "lost audience" that has stayed at home to watch their own sets.

Secondly, increasingly conscious of the parking problem, many new theatres are providing parking areas for their patrons so that there will be no inconvenience involved in coming to the movies by car. Parking facilities are particularly found at those theatres which are incorporated into regular community shopping centers.

Finally, a sizeable number of new theatres have provided such special services as checking facilities, hearing aids, cry rooms, art galleries, community rooms for civic functions, etc. These added facilities are specifically designed to impress upon patrons the fact that the management has their best interests at heart in furnishing these extra conveniences.

The extent of the above special features and the space allocated for them may be partially responsible for the fact that the new U. S. theatres presented on the following pages average only 900-1,000 seats in size. Of course, wider spacing between aisles and more limited operating budgets also account for this general reduction in seating capacity from that of previous years.

CARIB •

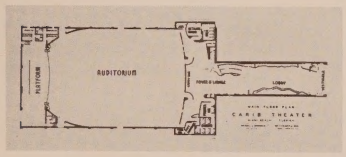
Miami Beach, Fla.

Easily one of the finest theatres erected during 1950, the 2,200-seat Carib was opened December 22, in one of the city's most fashionable shopping districts. As such, it commands an excellent admission scale.

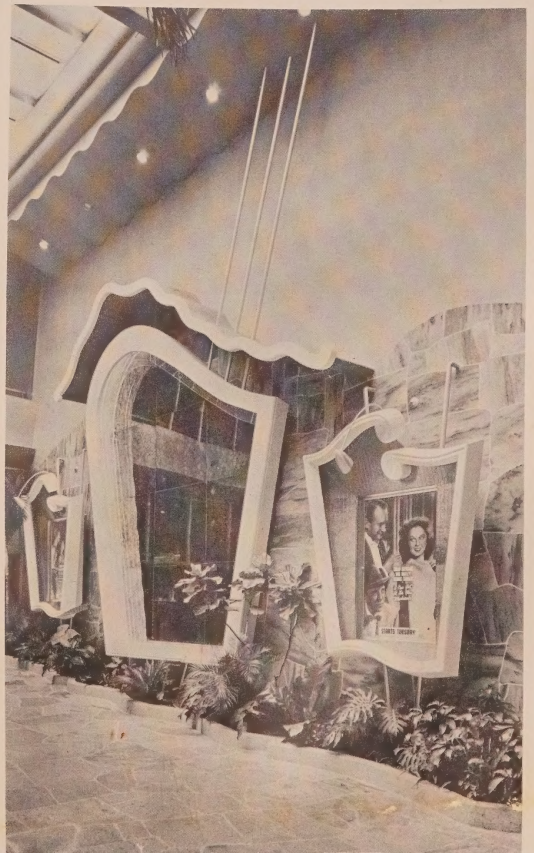
In keeping with its name and location, a Carribean theme prevails throughout the theatre. The front bears a huge map of the area done in raised porcelain, the open-air patio-foyer has a tropical atmosphere, and the auditorium is designed with a distinct under-sea motif.

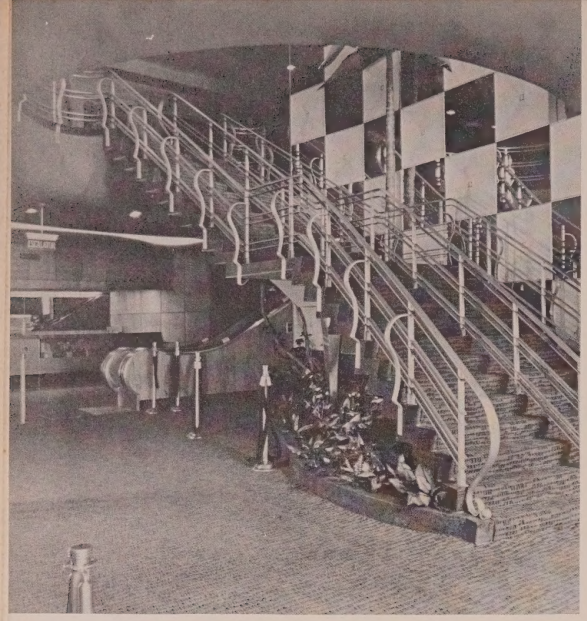
From the large main foyer, where a wide candy bar is situated, an escalator moves upward toward the mezzanine. This is enclosed with glass in the front to afford a full view of the patio-foyer entrance, wherein are found flagstone walls and floors, a huge antique mirror, and flying birds made of plexiglas.

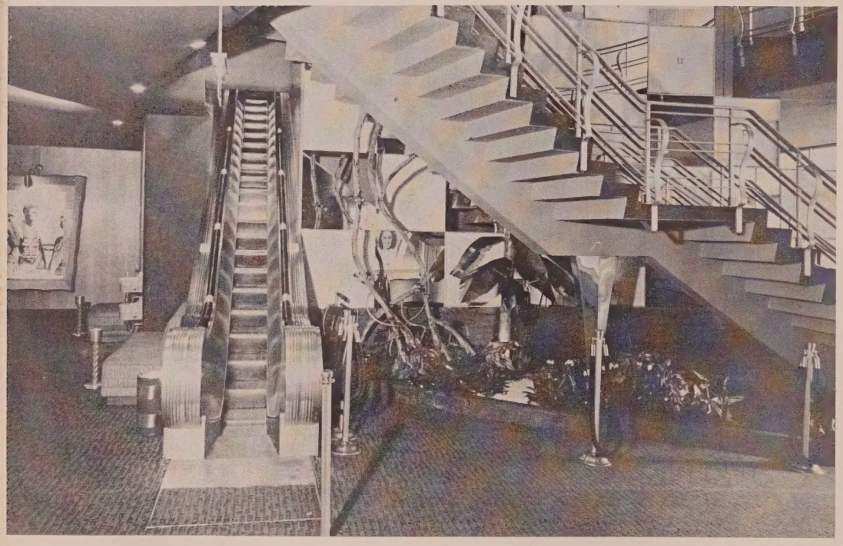
There is a television lounge on the second floor and another set in the foyer.



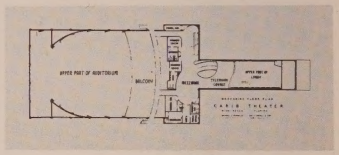
THE NOVEL ENTRANCE leads into the 40' high tropical patio-foyer with rolling glass roof. See waterfall on left wall, mirrors, displays right.

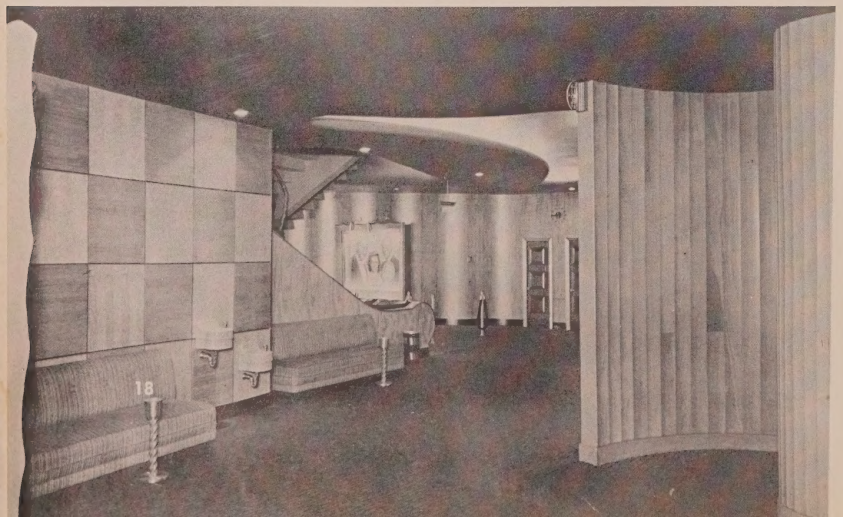






STAIRCASE AND ESCALATOR lead to mezzanine from main foyer. The patio-foyer is separated from rest of house by large transparent glass doors.





REFERENCE DATA

OWNER & OPERATOR: Wometco Theatres.

ARCHITECT: Michael DeAngelis. Associate: Roy France.

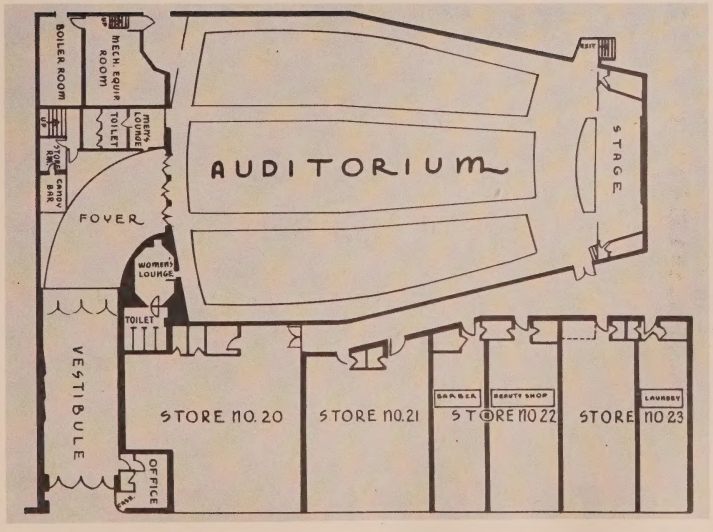
SEATING CAPACITY: 2,200.

SIZE OF LOT: 100′ x 175′ plus 30′ x 100′ entrance.

Carpets: Alexander Smith & Sons.
Chairs: Heywood-Wakefield Co., Kroehler Mfg. Co.
Curtain Controls & Track: Knoxville Scenic Studios.
Decorator: Fred Rank, Oscar Glass.
Display Frames: Universal Corp.
Draperies & Stage Curtains: Knoxville Scenic Studios.
Lenses: Bausch & Lomb Optical Co.
Projection Lamps: C. S. Ashcraft Mfg. Co. Super High.
Projection Machines: International Projector Corp. Simplex X-L.
Rewinders: GoldE Mfg. Co.
Rubber Mats: American Mat Corp.
Screen: B. F. Shearer Co. Cycloramic.
Sign & Marquee: Fennell Neon Corp.
Sign Letters: Adler Silhouette Letter Co. 10″, 17″ plastic.
Sound: RCA.
Supply Dealer: Southeastern Theatre Equip. Co., Joe Hornstein, Inc., Wil-Kin Theatre Supply, Inc.
Ticket Issuing Machine: General Register Corp.
Wall Fabrics: Frankel Associates, Inc.

A VIEW OF THE AUDITORIUM from the mezzanine smoking loge shows some of the Kroehler "push-back" seats with higher backs than those in the orchestra. **BELOW:** The proscenium arch has bases of Octopus-design which, when indirectly lighted, make proscenium appear to float in mid-air.

THE CARTOUCHE DESIGN on either side of the proscenium arch signifies a floating sheet with mystic designs of undersea life and is made of plexiglas and ornamental plaster with indirect lighting. **BELOW:** The right rear and left are smoking sections with Heywood-Wakefield chairs.



NORTHWOOD •

Baltimore, Md.

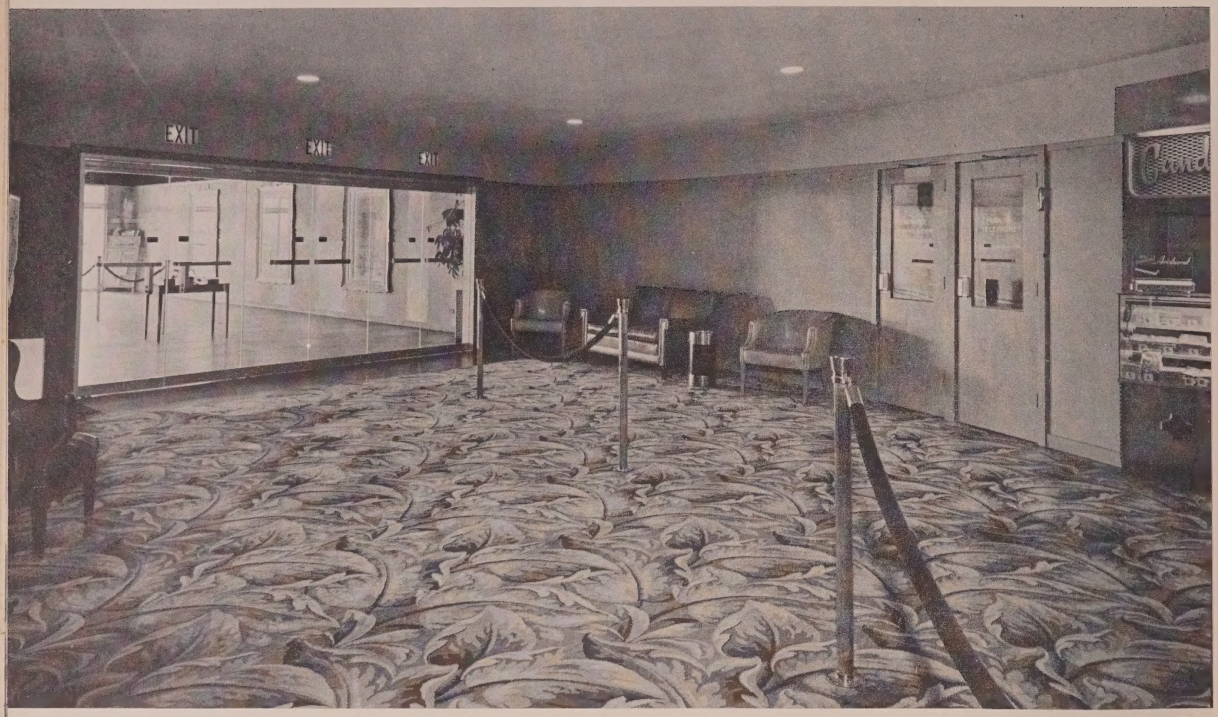
Part of a large suburban shopping center with parking accommodations for 1,000 cars, the Northwood was opened August 5, 1950. First-neighborhood-run pictures are shown at an adult admission scale of 44c to a white-collar populace of approximately 100,000.

A unique feature is a large sign tower in front of the type usually found only at drive-ins. The face of the facade itself is marble with glass entrance doors.

These lead into a lobby whose walls are hung with prominent display frames, and hence on into a richly carpeted foyer with paneled walls and an inviting candy bar at one side.

The decor of the auditorium is simple with shades of brown, green, and strawberry. Modernistic figures on the walls furnish the only decorative elements.

Special assets, in addition to the parking area, include a physicians' call box in the foyer, free checking facilities, and hearing aids.

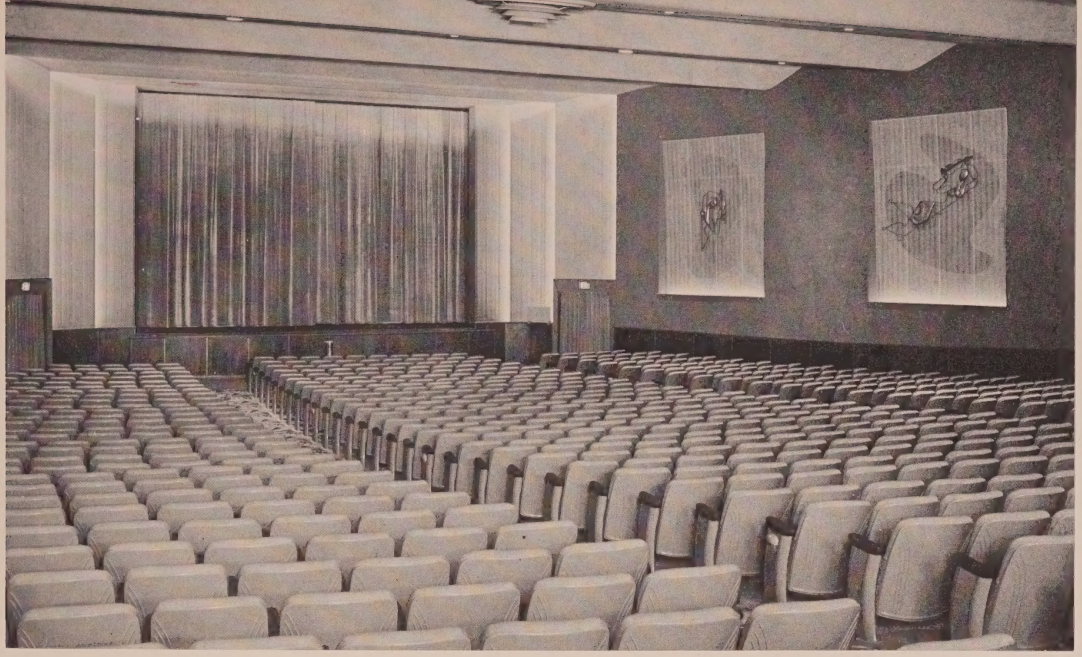


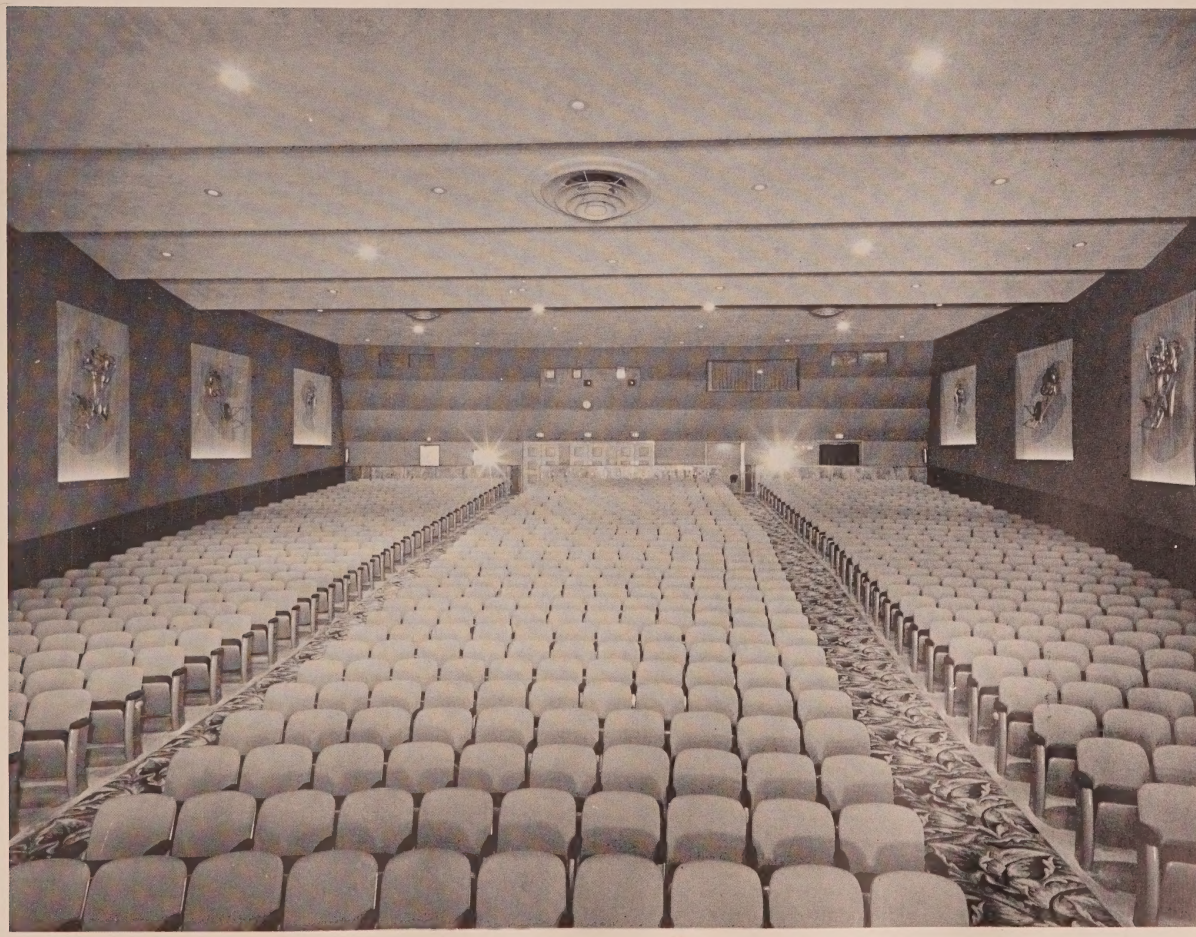
THE CANDY BAR in the foyer serves a wide variety of sweets, plus popcorn and soft drinks. **OPPOSITE:** Indirect lighting around proscenium and beneath panels complements ceiling lights.

REFERENCE DATA

OWNER: Northwood Theatre Corp.
OPERATOR: Joseph C. Grant.
ARCHITECT: Fred Dixon.
SEATING CAPACITY: 1,144.
COST OF EQUIPMENT: $90,000.
SIZE OF LOT: 80′ x 150′ plus 20′ x 44′ entrance.

Acoustical Material: Fiberglas.
Carpets: Alexander Smith & Sons Carpet Co.
Chairs: Heywood-Wakefield Co.
Decorator: Paramount Decorating Co.
Draperies & Stage Curtains: Paramount Decorating Co.
Generators: Motiograph, Inc. 125/150.
Lenses: Bausch & Lomb Optical Co. Super Cinephor.
Projection Lamps: Strong Electric Corp. "Mighty 90".
Projection Machines: Motiograph, Inc.
Rewinders: Goldberg Bros.
Rubber Mats: Perfo Rubber Mat Co.
Screen: B. F. Shearer Co. Starke Cycloramic.
Sign & Marquee: Triangle Sign Co.
Sign Letters: Adler Silhouette Letter Co. 10″, 17″ third dimensional plastic.
Sound: Motiograph, Inc.
Supply Dealer: J. F. Dusman Co.
Ticket Issuing Machine: General Register Corp.
Ticket Chopper: General Register Corp.
Wall Fabrics: Frankel Associates, Inc.





REFERENCF DATA

OWNER & OPERATOR: Isley Theatres.
ARCHITECT: Raymond F. Smith.
SEATING CAPACITY: 1,608.
COST OF BUILDING: $200,000.
COST OF EQUIPMENT (including air conditioning): $100,000.
SIZE OF LOT: 67′ x 170′.

Carpets: Alexander Smith & Sons.
Chairs: Kroehler Mfg. Co., American Seating Co.
Curtain Controls & Track: Oklahoma Scenic Co.
Decorator: Nat Smythe.
Display Frames: Theatre Specialties, Inc.
Draperies & Stage Curtains: Oklahoma Scenic Co.
Generators: Hertner Electric Co. 70/140.
Lenses: Bausch & Lomb Optical Co.
Projection Lamps: J. E. McAuley Mfg. Co. Peerless.
Projection Machines: International Projector Corp. Simplex E-7.
Rewinders: GoldE Mfg. Co.
Screen: Walker-American Corp.
Sign & Marquee: Texas Neon Sign Co.
Sign Letters: Wagner Sign Service, Inc.
Sound: International Projector Corp.
Supply Dealer: National Theatre Supply.
Vending Machines: Manley, Inc.
Wall Fabrics: Maharam Fabric Corp.

CAPITAN •

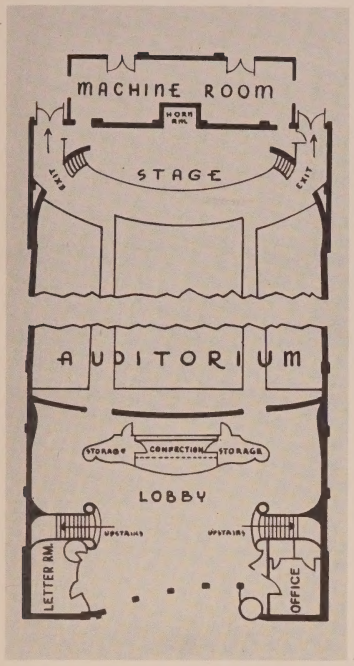
Pasadena, Tex.

Designed as the entertainment focal point of a shopping center two blocks long in a suburb of Houston, the Capitan was opened just before the year 1950 began. It serves a drawing area of 50,000 industrial workers with first-run pictures on a three-change-per-week schedule.

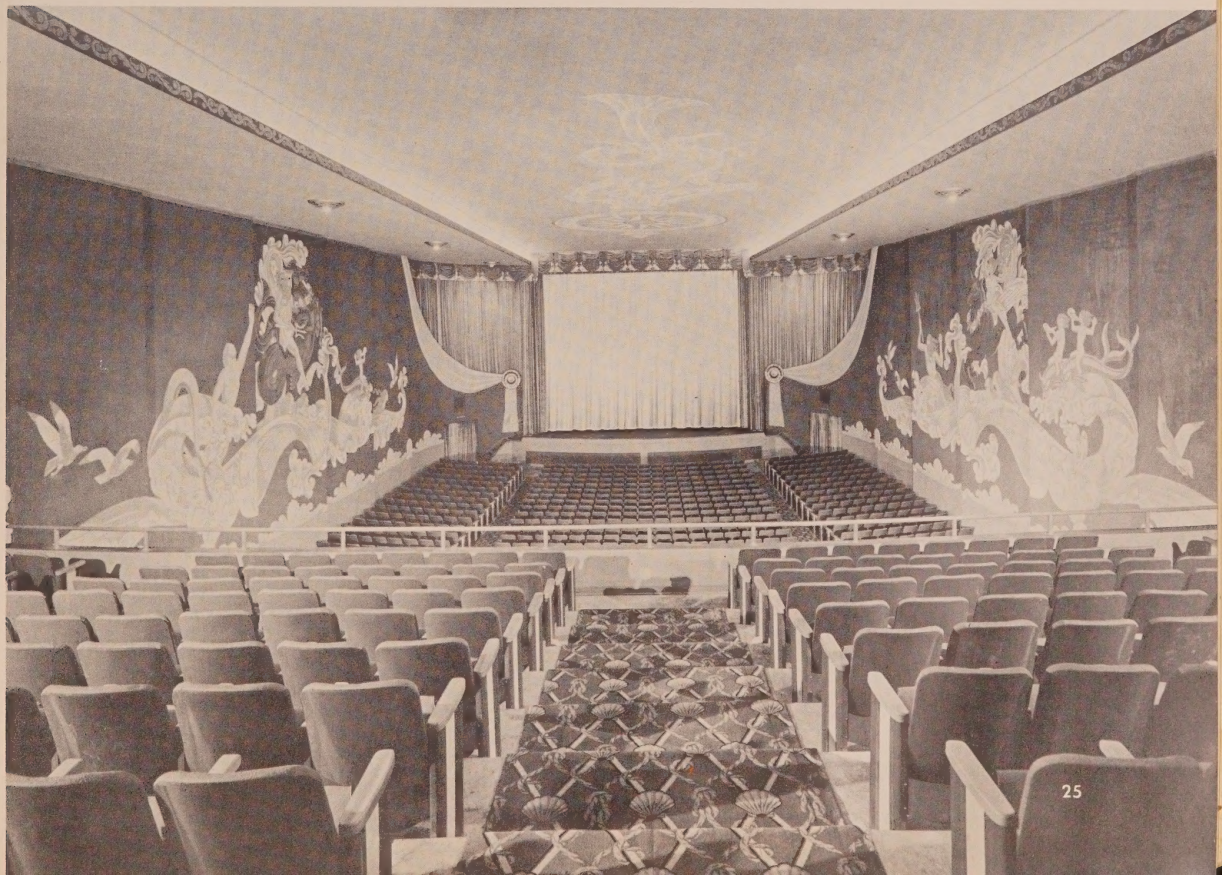
Key features of the brick front are a large nautical mural, a vertical porcelain enamel sign, and maroon structural glass trim.

Glass entrance doors lead into a lobby where silver leaf coffers and white stencil "snowflake" patterns embellish a salmon ceiling. The walls and carpet are green, and a long candy stand at one side has a quilted leatherette front with mirrors behind.

Toilet rooms have white and pink tile.



A FULL-SIZED STAGE is provided in the auditorium for presentation of live entertainment. The cast plaster decorations on the walls are green and white with a predominantly nautical theme, also visible in orchestra and balcony carpeting. Note scroll work at proscenium sides.



WATTS •

Osage, Ia.

Situated in the main business section of a town with a population of 3,400 in a rich farming area, the Watts was opened February 16, 1950.

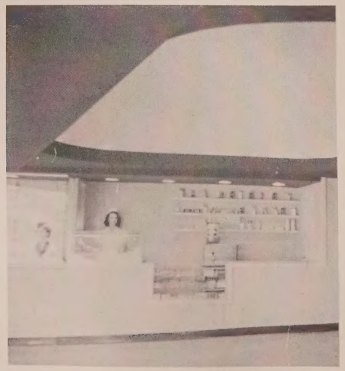
The Arizona limestone and glass front leads into a lobby with a planting area at the immediate entrance and an inviting refreshment stand at one side. The curved ceiling is white with a lighting cove in wine; by contrast, the floor is green.

Directly opposite the foyer entrance is another planting area with a wall mirror behind. At one side of the foyer are located the cry and check rooms, while the other contains the rest rooms.

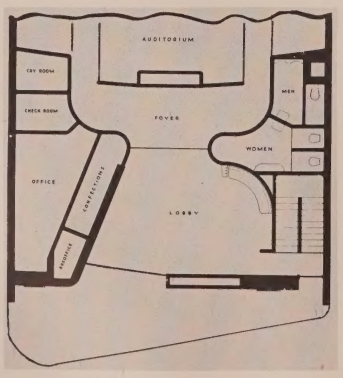
The decor of the auditorium is simple with indirectly lighted wall columns and a plain proscenium. Space for wheel chairs and hearing aids are provided. Organ music is played before and after shows.

Special features include living quarters above, office behind concession, and heating pipes under sidewalk.

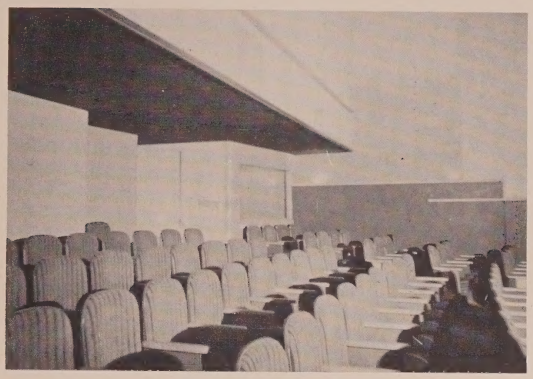
LOBBY DOORS OPEN ON THE CONCESSION



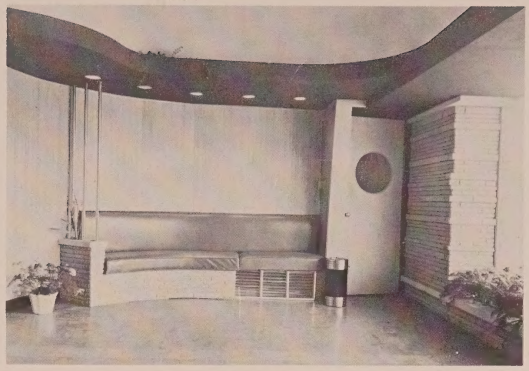
PLOT PLAN INDICATES COMPACT LAYOUT.



PLANT TROUGH IS OPPOSITE FOYER DOORS.



SECTION OF AUDITORIUM REAR SHOWS CRY ROOM AT THE RIGHT.



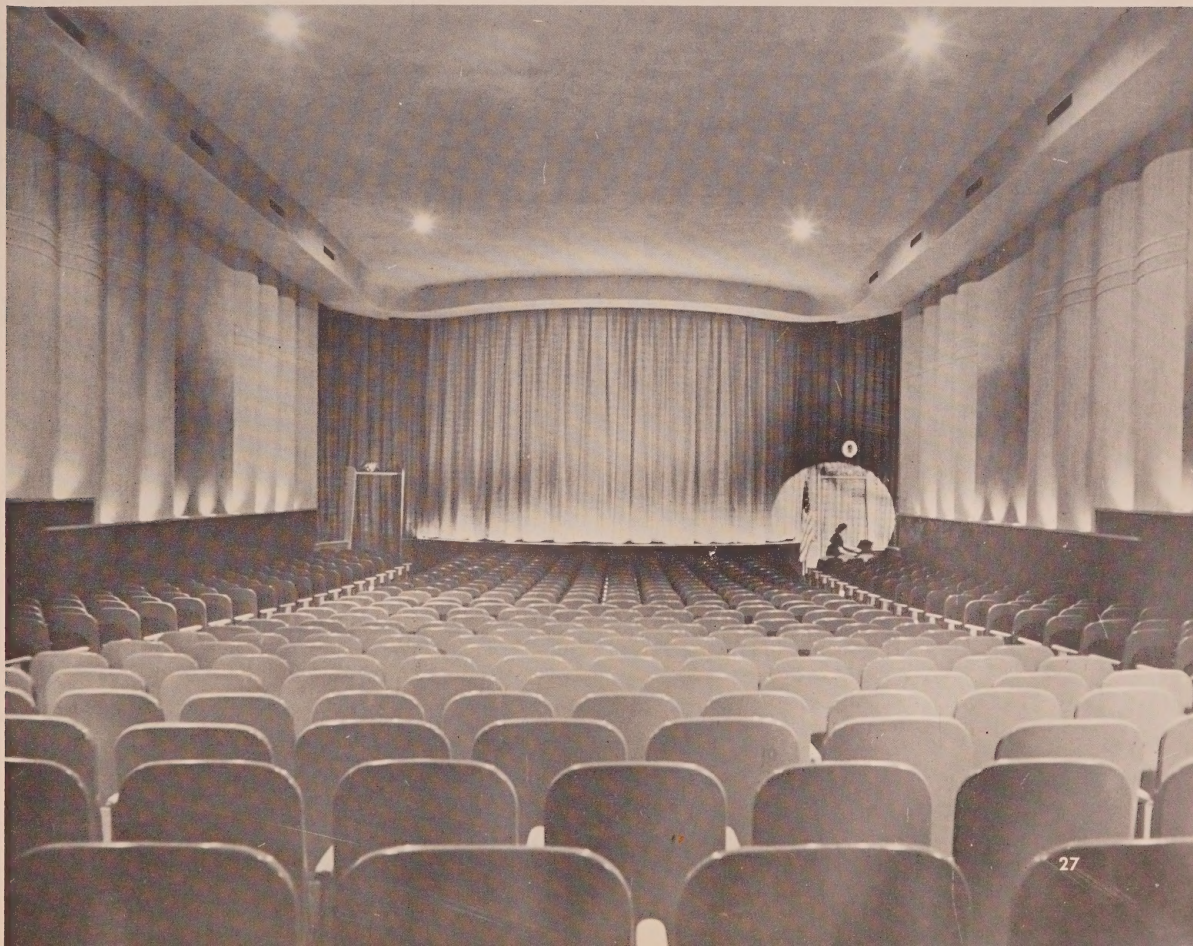
A COMFORTABLE LOUNGE STRETCHES ACROSS RIGHT OF LOBBY.

REFERENCE DATA

OWNER & OPERATOR: James H. & Mildred H. Watts.
ARCHITECT: Charles Altfillisch.
SEATING CAPACITY: 676.

Air Conditioning: U. S. Air Conditioning Corp.
Carpets: Bigelow-Sanford Carpet Co.
Chairs: Kroehler Mfg. Co.
Curtain Controls & Track: Vallen, Inc.
Decorator: J. H. Watts.
Draperies & Stage Curtains: Des Moines Theatre Supply.
Lenses: Kollmorgen Optical Corp. F 1.9.
Projection Lamps: Strong Electric Corp.
Projection Machines: Century Projector Corp.
Rectifiers: Strong Electric Corp.
Rewinders: GoldE Mfg. Co.
Screen: B. F. Shearer Starke Cycloramic.
Sign Letters: Theatre Specialties, Inc.
Sound: Century Projector Corp.
Supply Dealer: Des Moines Theatre Supply.

SPECIAL LIGHTING EFFECTS SET OFF THE AUDITORIUM WALL COLUMNS AND AQUA CURTAIN WHILE A SPOTLIGHT STRIKES ORGANIST.



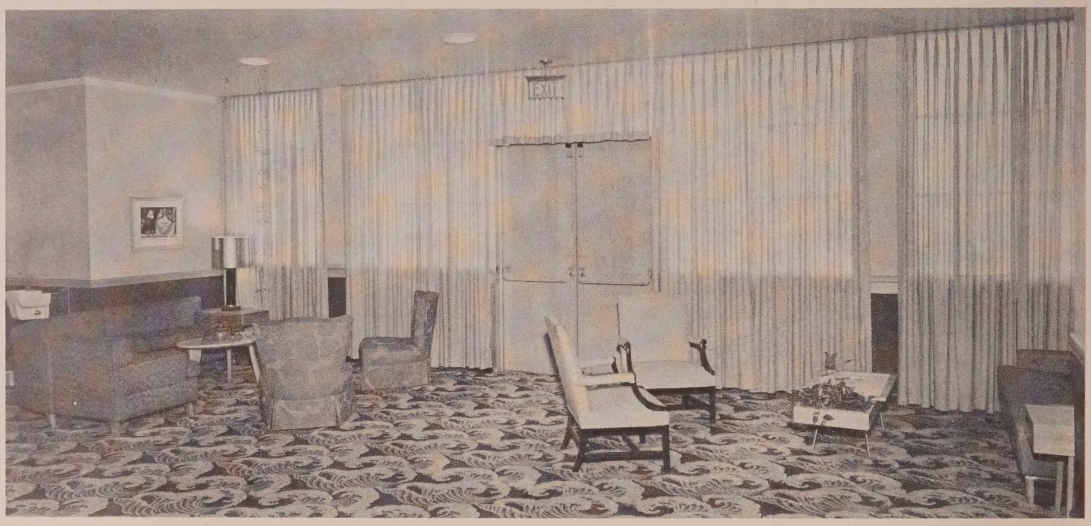
WESTOVER •

Richmond, Va.

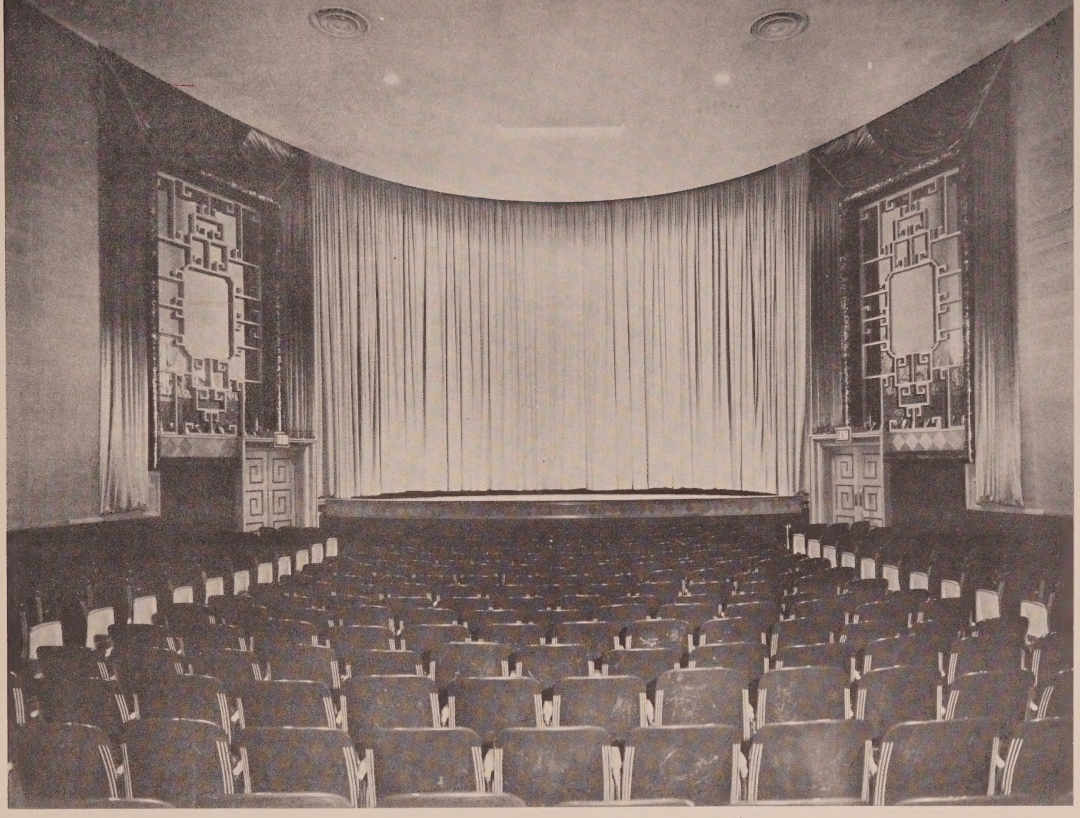
This 836-seat house was opened August 30, 1950, to serve a drawing area of 30,000 high type office and factory workers.

Situated in a neighborhood shopping center, it has special provisions in the loge section to accommodate the wheel chairs of paraplegic patrons from a nearby Veterans' Hospital. Another special feature is a large community meeting room on the mezzanine floor.

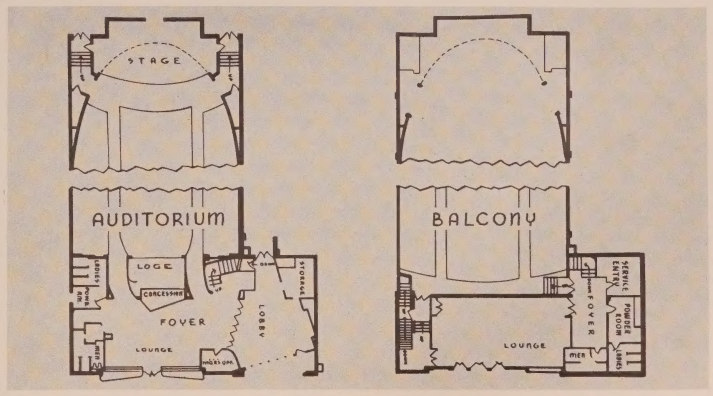
The modern exterior leads into an interior that is resplendent in every detail from the gold contour curtain in the auditorium to the beautiful ceramic tile floors in the wash rooms.



THE CONTEMPORARY EXTERIOR DESIGN has a pink tile facing around the entrance with the balance of the front red brick, marked by cast iron treillage. Entrance doors are aluminum and plate glass. The main floor foyer is comfortably furnished and has a colorfully attractive candy bar.



THE INWARD SWEEP of the curtain and the two dados focus attention on the proscenium. Floor plan shows large community room on second story.



REFERENCE DATA

OWNER & OPERATOR: Neighborhood Theatre, Inc.
ARCHITECT: A. O. Budina, A.S.A.
SEATING CAPACITY: 836.
COST OF BUILDING (including air conditioning): $170,000
COST OF EQUIPMENT: $45,000.
SIZE OF LOT: 157' x 200'.

Carpets: Alexander Smith & Sons Carpet Co.
Chair: American Seating Co.
Curtain Controls & Track: J. R. Clancy, Inc.
Decorator: A. O. Budina.
Display Frames: Theatre Specialties, Inc.
Draperies & Stage Curtains: Novelty Scenic Studios, Inc.
Generators: Hertner Electric Co.
Lenses: Kollmorgen Optical Corp.
Projection Lamps: J. E. McAuley Mfg. Co. Peerless.
Projection Machines: International Projector Corp. Simplex.
Screen: Walker-American Corp. P.M.
Sign & Marquee: Talley Neon Co.
Sign Letters: Theatre Specialties, Inc.
Sound: International Projector Corp.
Supply Dealer: National Theatre Supply.
Ticket Issuing Machine: General Register Corp.
Ticket Chopper: GoldE Mfg. Co.
Wall Fabrics: Thortel; Maharam Fabric Corp.

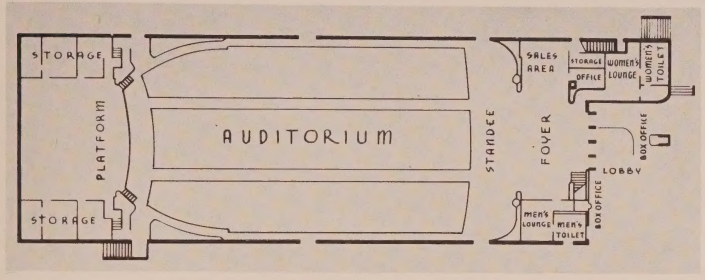
STATE •

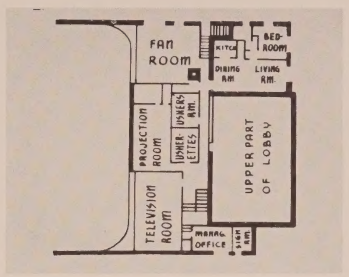
Cuyahoga Falls, Ohio

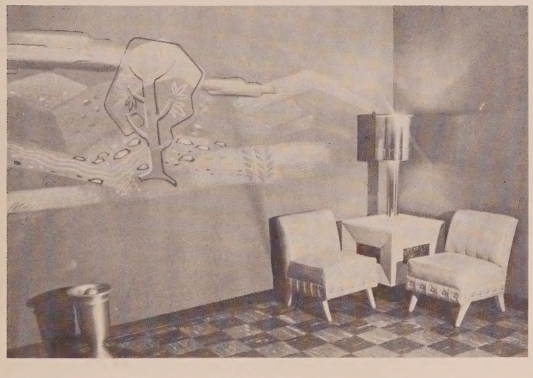
Opened June 16, 1950, in a residential area with a population of approximately 20,000 middle-class wage earners to draw on, the State shows first-run pictures at a 60c admission charge.

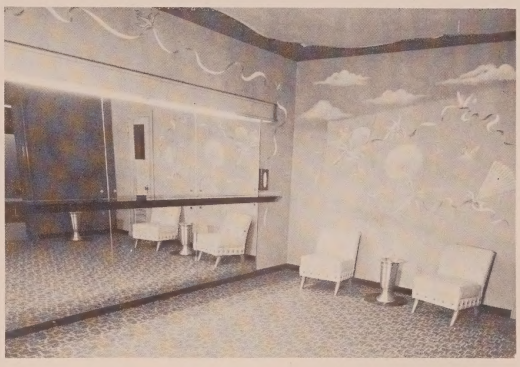
An imposing front of red granite, stainless steel, brick, and glass overlooks a terraced lawn and driveway that leads to a parking lot for 900 cars. Two box-offices in the lobby have been substituted for the conventional outside type.

Both the lobby and foyer are richly carpeted and decorated with fine wall murals. A stairway leads from the latter section to a 50-seat television lounge. Quarters for the caretaker are provided on the southwest corner of second floor.









THE SIMPLE DECOR OF THE AUDITORIUM is in contrast to that of the rest of the house with only illuminated wall panels to detract attention from the center of interest, the proscenium. The two floor plans show the compact arrangement of the various elements, including rooming facilities. Both men's and ladies' lounges are handsomely decorated and furnished. The lobby candy stand has ample space.

REFERENCE DATA

OWNER & OPERATOR: The Cuyahoga Falls Amusement Co.
ARCHITECT: George A. Ebeling.
SEATING CAPACITY: 1,800.

Carpets: A. & M. Karagheusian, Inc.
Chairs: American Seating Co.
Decorator: Hanns R. Teichert Co.
Draperies & Stage Curtains: Premier Studios, Inc.
Generators: Hertner Electric Co.
Lenses: Bausch & Lomb Optical Co.
Projection Lamps: J. E. McAuley Mfg. Co. Peerless.
Projection Machines: International Projector Corp. Simplex E-7.
Screen: B. F. Shearer Co. Cycloramic.
Sign & Marquee: Jenkins Sign Co.
Sign Letters: Theatre Specialties, Inc.
Sound: International Projector Corp.
Supply Dealer: National Theatre Supply.
Ticket Issuing Machine: General Register Corp.
Vending Machines: Manley, Inc.
Wall Fabrics: Maharam Fabric Corp.

TEXAS •

Kingsville, Tex.

Located in the main business section of its community, the Texas shows first-run pictures at an adult price of 55c.

The front of the building, which includes two rental stores, is Arizona crab orchard stone with light buff face brick above the soffit line. Lighting is furnished by white neon tubing. On one side is a large picture window looking into the lobby area.

Both the lobby and foyer have smooth-finish plaster walls, carpeted floors, and indirect neon lighting in coves. A cry room and refreshment stand are at opposite sides of the foyer.

The auditorium, including the balcony, is done in buff and blue, while rest rooms are coral in the ladies' and buff in the men's.

REFERENCE DATA

OWNER & OPERATOR: Hall Industries Theatres.

ARCHITECT: Jack Corgan.

SEATING CAPACITY: 1,300.

COST OF BUILDING: $210,000.

COST OF EQUIPMENT (including air conditioning): $70,000.

SIZE OF LOT: 75' x 140'.

Carpets: Alexander Smith & Sons Carpet Co. Crestwood

Chairs: Ideal Seating Co.

Curtain Controls & Track: Vallen, Inc.

Decorator: L. E. Travis Co.

Display Frames: Universal Corp. Sealuxe.

Draperies & Stage Curtains: Oklahoma City Scenic Co.

Generators: Century.

Lenses: Bausch & Lomb Optical Co. Super Cinephor.

Projection Lamps: J. E. McAuley Mfg. Co. Peerless.

Projection Machines: International Projector Corp. Simplex E-7.

Rewinders: GoldE Mfg. Co.

Screen: B. F. Shearer Co. Starke Cycloramic.

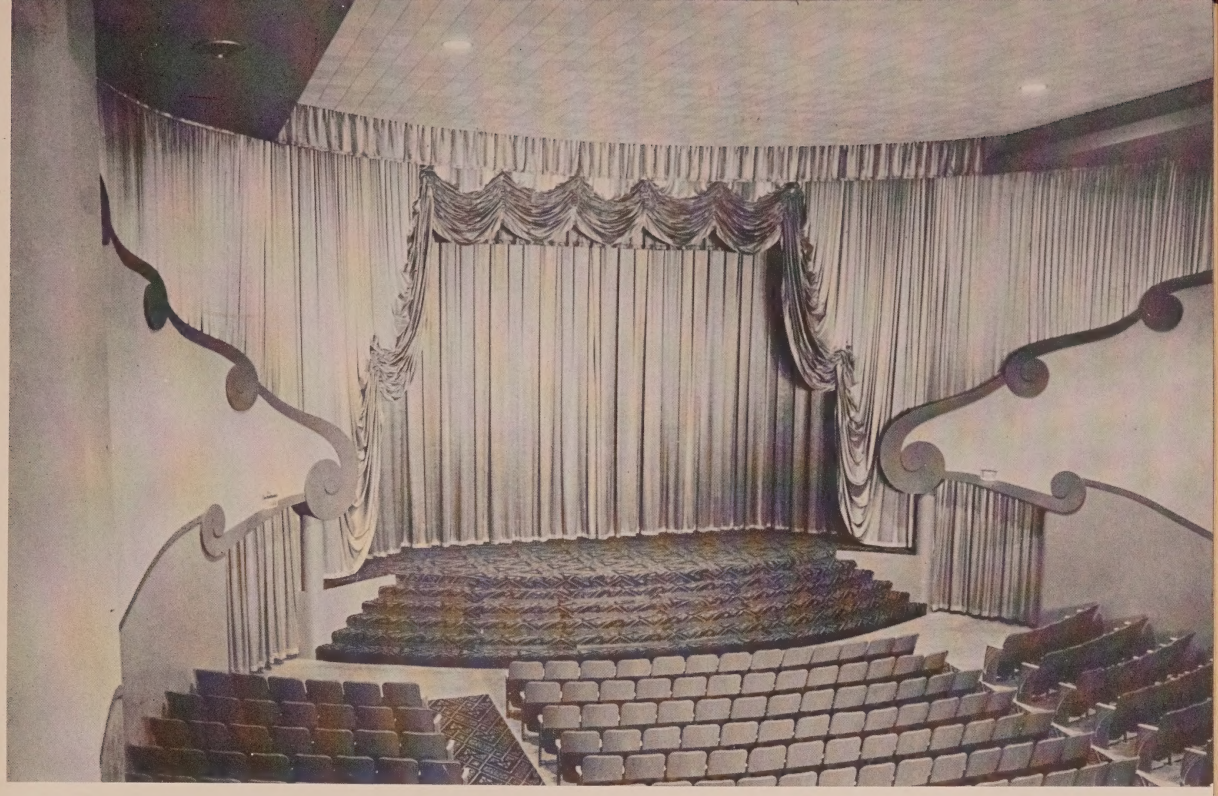
Sign & Marquee: Federal Electric Co.

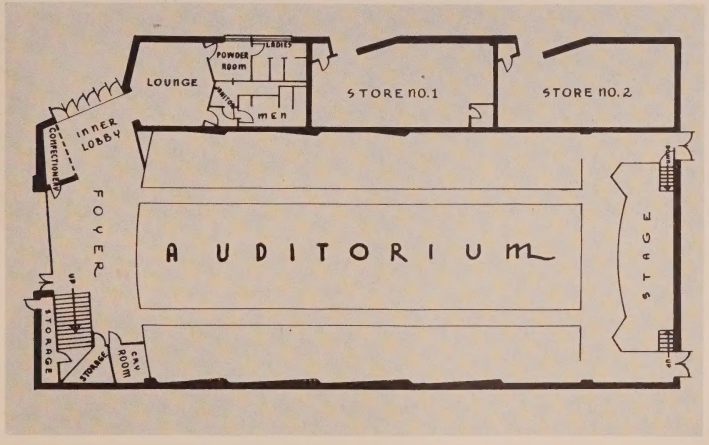
Sign Letters: Wagner Sign Service, Inc. 4", 10" plastic.

Sound: International Projector Corp.

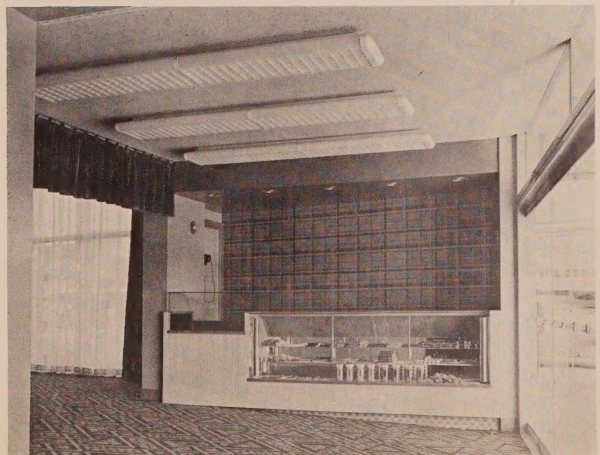
Supply Dealer: Southwestern Theatre Equip. Co., National Theatre Supply.

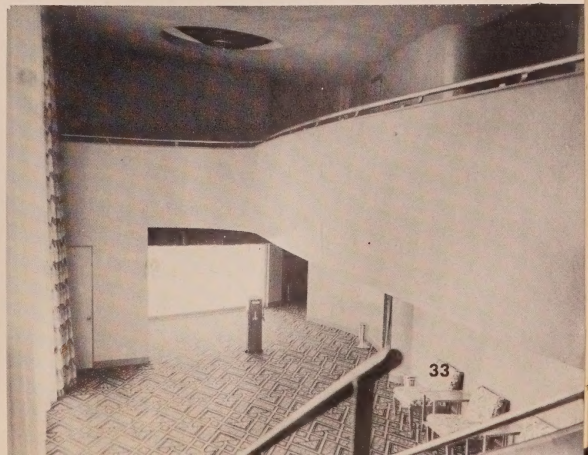
Wall Fabrics: Varlar, United Wallpaper; Maharam Fabric Corp.





BLUE TONES in the curtain and chairs complement the Sabonite buff plaster auditorium walls. Flowered wallpaper decorates lounge, while a plaid type is behind foyer candy bar.





MERBEN •

Philadelphia, Pa.

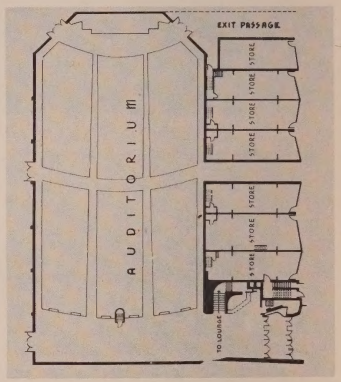
The mammoth Merben, which opened August 16, 1950, is situated in a busy shopping district that has a drawing area populace of 350,000, most of whom are industrial and white-collar workers.

The front of the building, which includes eight stores, is roman buff brick with green and red porcelain enamel trimmed by aluminum, for a striking effect.

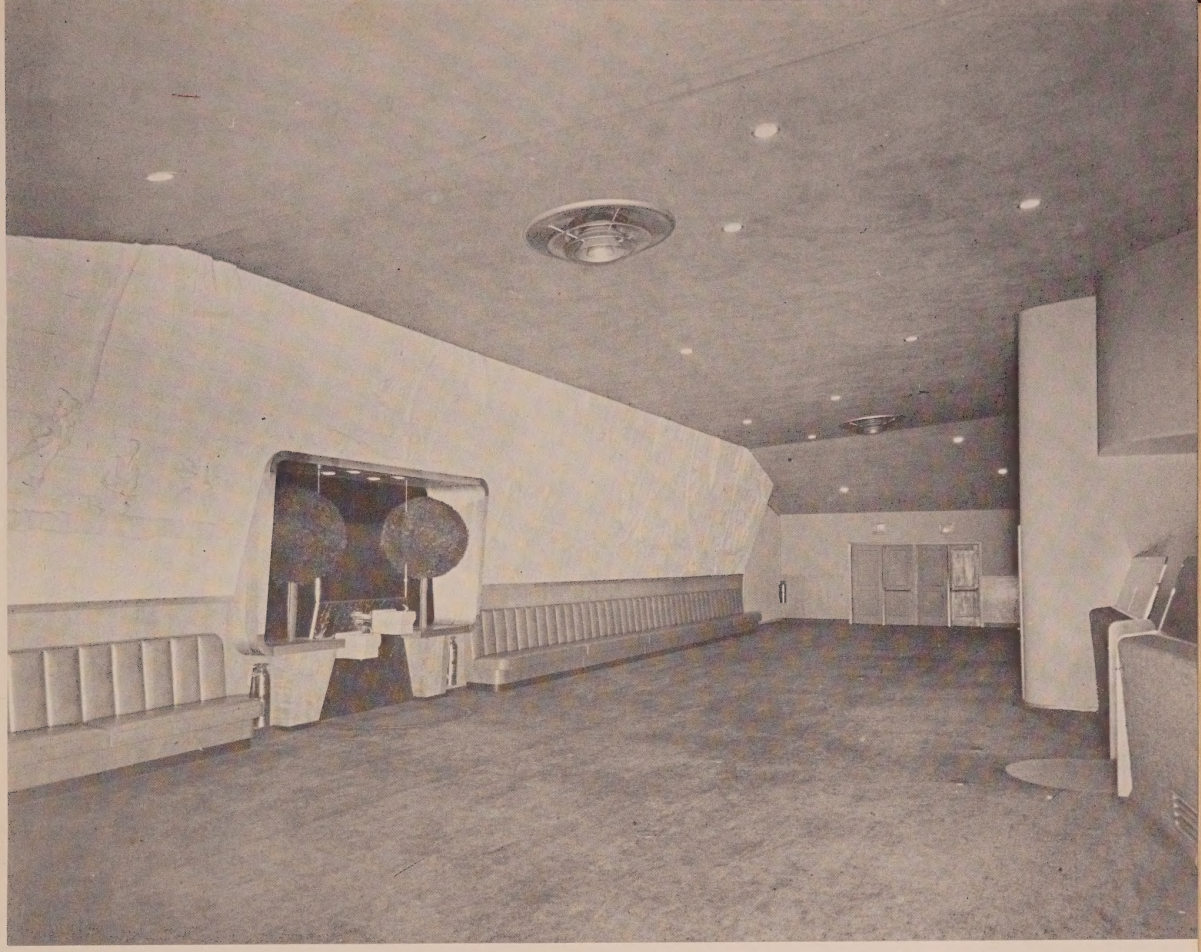
From a small lobby the patron enters a gigantic foyer covered with an eggplant color carpet. One wall is black, with peach mirrors, while the other is ornamented with white plastic figures.

Directly beside a staircase, which leads down to a lounge, rest rooms, and television salon in the basement, is a candy counter in tan leather and black and white woodwork.

The decor of the auditorium is quite simple with plain gray side walls and a standee wall in modeled plaster relief. The supporting column for the gray projection booth is painted watermelon red.



FLOOR PLAN conveys some idea of the enormity of the building with stores as well as theatre.

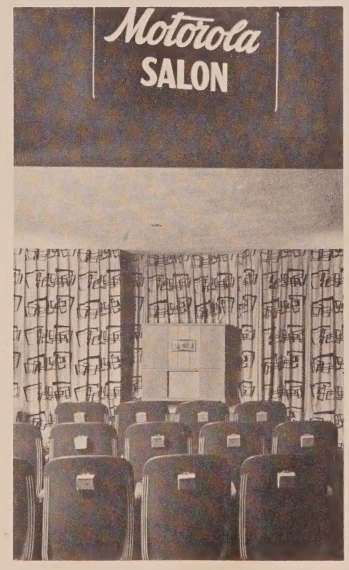


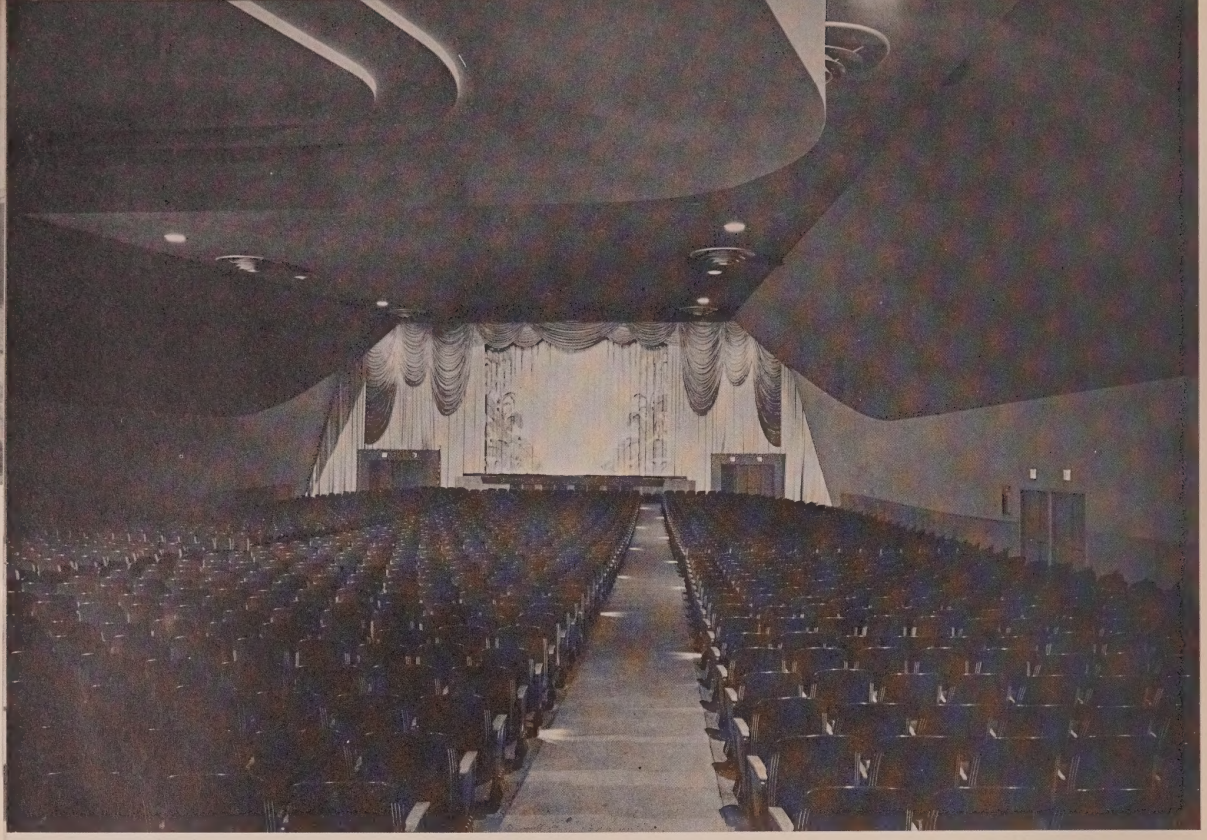
REFERENCE DATA

OWNER: Welford Corp.
OPERATOR: Merben-Mayfair Associates.
ARCHITECT: Armand Carroll & Wm. J. Stephenson.
SEATING CAPACITY: 2,000.
COST OF BUILDING: $500,000.
COST OF EQUIPMENT (including air conditioning): $150,000.
SIZE OF LOT: 325' x 155'.

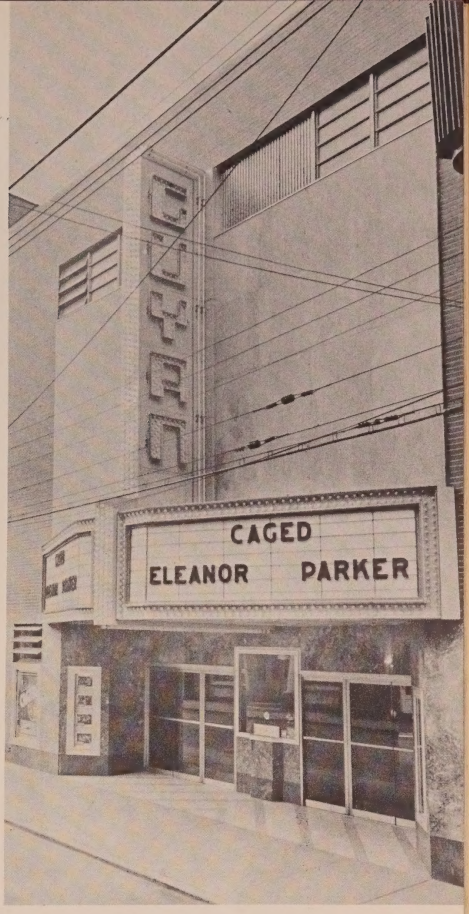
Chairs: American Seating Co.
Curtain Controls & Track: Vallen, Inc.
Decorator: Armando T. Ricci.
Draperies & Stage Curtains: Novelty Scenic Studios, Inc.
Generators: Century Electric Co.
Lenses: Kollmorgen Optical Corp.
Projection Lamps: RCA.
Projection Machines: RCA.
Rewinders: GoldE Mfg. Co.
Screen: RCA.
Sign & Marquee: Penn Neon Sign Co.
Sign Letters: Wagner Sign Service, Inc.
Sound: RCA.
Supply Dealer: Blumberg Bros., Inc.
Ticket Issuing Machine: General Register Corp.
Wall Fabrics: Maharam Fabric Corp.

UNDERNEATH the magnificent foyer, into which the small lobby leads, is the television salon with green walls, asphalt tile floor, stylish drapes and 14 opera chairs, plus upholstered furniture.





THE CONTOUR AND DRAW CURTAINS furnish the principal auditorium decorative elements, thus focusing audience attention directly on the proscenium. In spite of the 2,000 seats available, ample standee space has been provided in the rear. Downlights form the main source of illumination.



GUYAN •

Logan, W. Va.

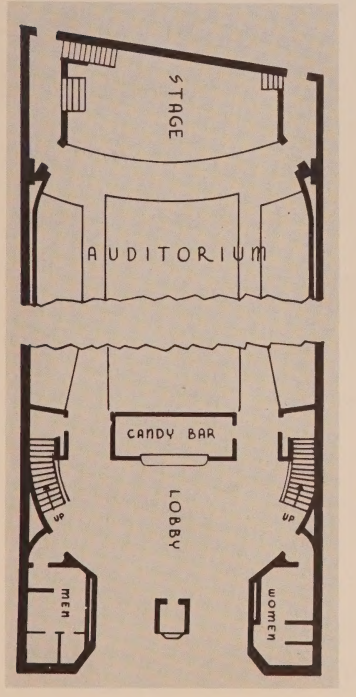
Opened April 1, 1950, the Guyan is located in a prosperous mining and industrial area. First-run features are shown.

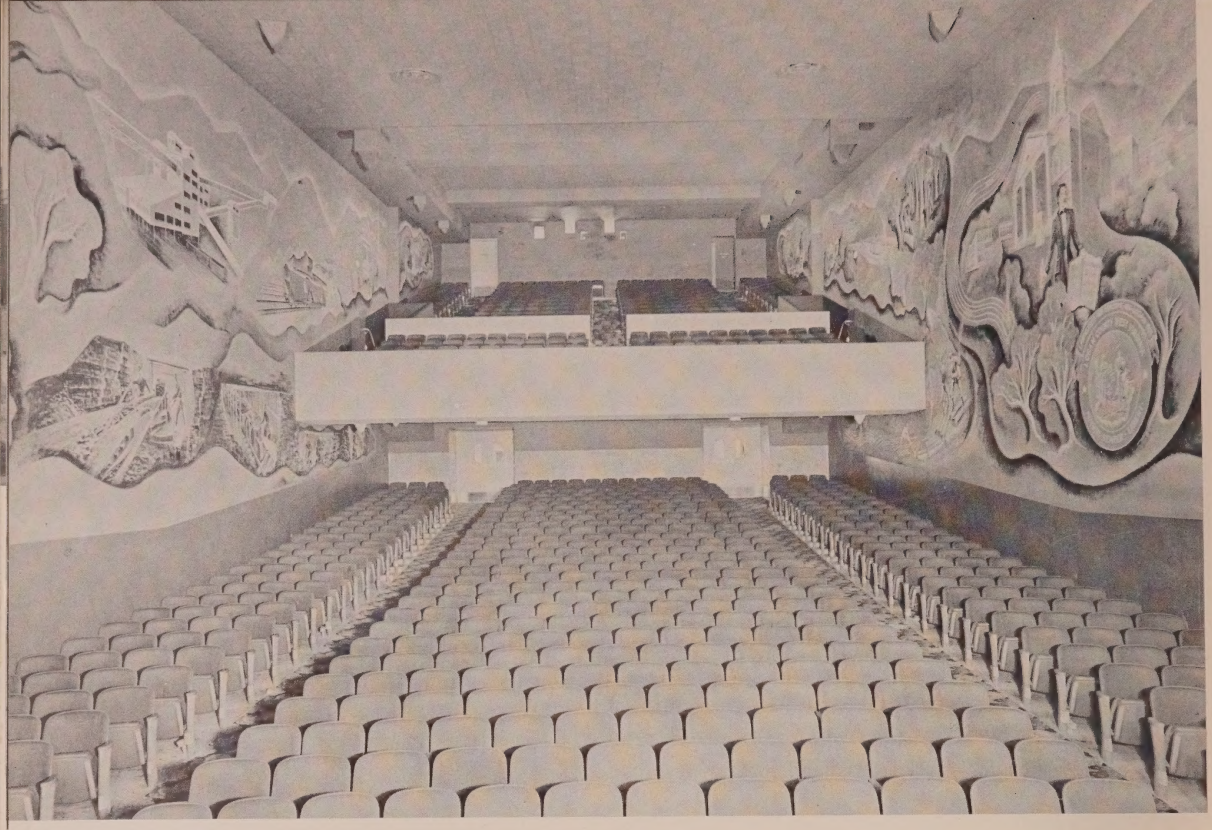
The front of the brick building has two types of marble facing. A neon vertical sign rises from a V-shaped marquee.

Glass doors lead into a semi-circular lobby with entrance to men's lounge at one side and to the powder room at the other. Stairs lead from the green and pink terrazzo floor to the balcony. Walls are putty-colored plastic applied over plaster, and the ceiling is pink with cove and downlighting.

The walls and ceiling of the refreshment stand, which faces front entrance doors, are lined with blue flexglas.

Lavish murals provide a bright decorative theme for the auditorium.

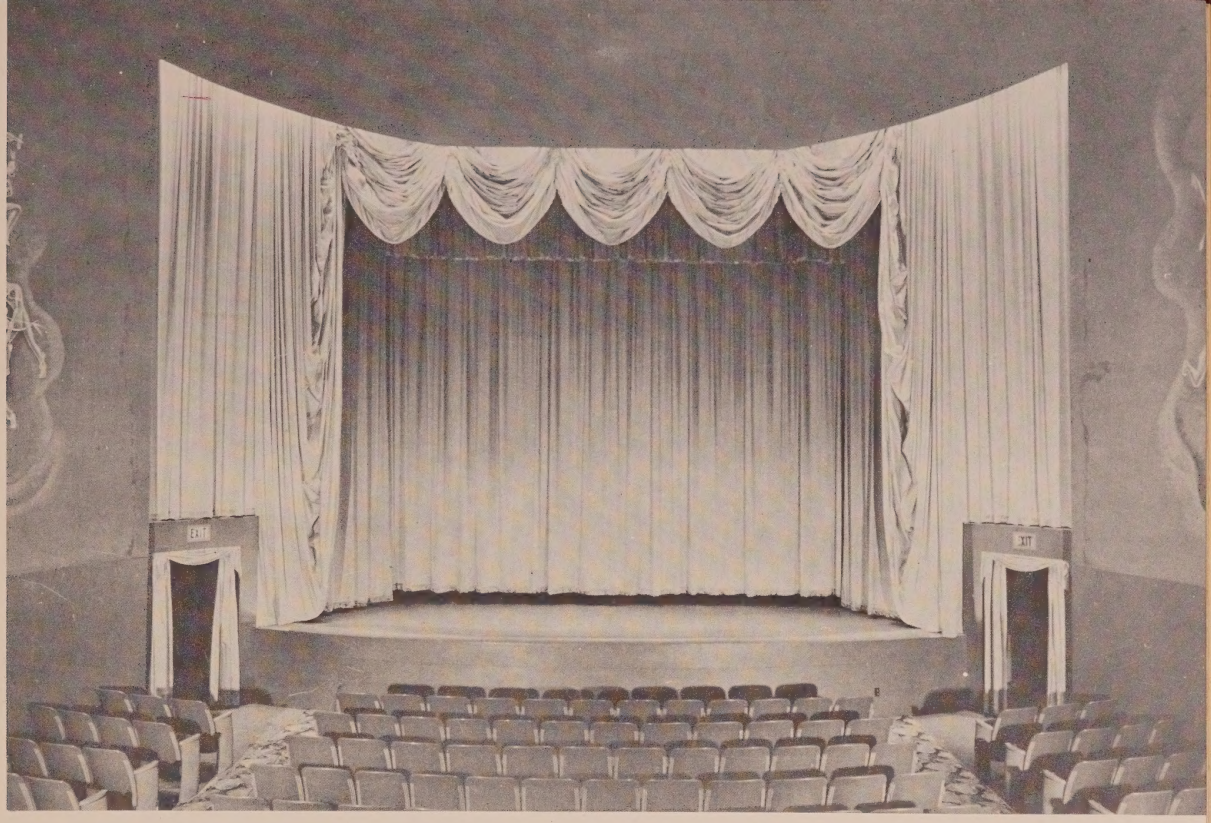




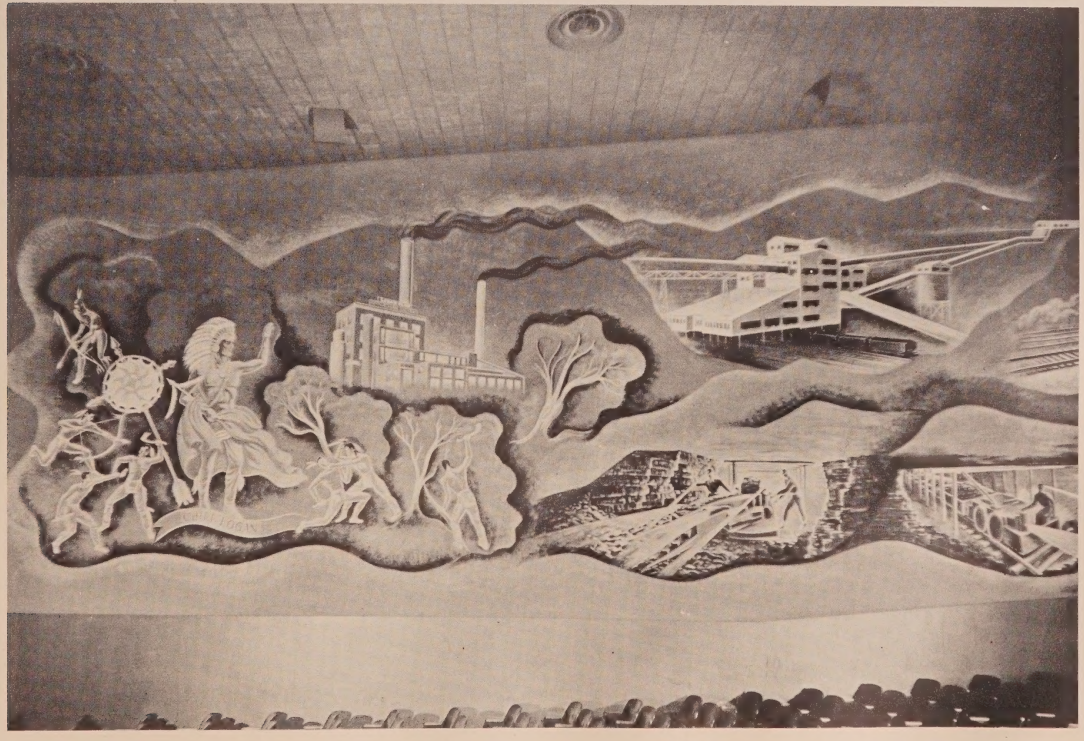
REFERENCE DATA

OWNER & OPERATOR: Newbold Keesling Circuit.
ARCHITECT: Alex B. Mahood.
SEATING CAPACITY: 964.
COST OF BUILDING (including air conditioning): $248,155.67.
COST OF EQUIPMENT: $35,000.
SIZE OF LOT: 46' x 148'.

Carpets: Alexander Smith & Sons Carpet Co. Crestwood.
Chairs: American Seating Co.
Curtain Controls & Track: J. R. Clancy, Inc.
Decorator: Hanns R. Teichert Co.
Display Frames: Universal Corp.
Draperies & Stage Curtains: Premier Studios, Inc.
Lenses: Kollmorgen Optical Corp. Super Snaplite F 1.9.
Lighting Fixtures: Black Light Products, Century Lighting, Inc.
Projection Lamps: Strong Electric Corp.
Projection Machines: Motiograph, Inc.
Rectifiers: Strong Electric Corp.
Rewinders: Goldberg Bros., Wenzel Projector Co.
Rubber Mats: Lorraine Rubber Engr. Co.
Screen: B. F. Shearer Co. Starke Cycloramic.
Sign & Marquee: Stanford Signs, Inc.
Sound: Motiograph, Inc. Mirrophonic.
Supply Dealer: Charleston Theatre Supply.
Ticket Issuing Machine: General Register Corp.
Ticket Chopper: General Register Corp.
Wall Fabrics: Maharam Fabric Corp.



THE COLORFUL WALL MURALS in the auditorium, which depict local Indian lore, industry, and even the Hatfield-McCoy feud, are made to fluoresce by black light. No general "white" lighting is employed. At intermission lights play over the lowered peanut-colored contour curtain.



HAVEN •

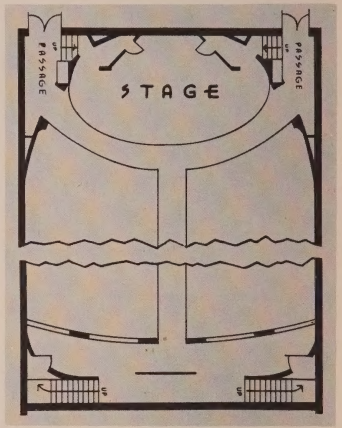
Brookhaven, Miss.

A first-run theatre situated in the center of the business district, the Haven was opened August 29, 1950. Musical comedies and westerns are mainly shown.

Letters on the maroon and cream metal marquee are masonite. Neon lighting in rose, gold, and green illuminates the large vertical sign and marquee "H" insignia.

Cream and green tile covers the lobby floor, walls are burgundy and green, and ceiling is white. A similar color scheme prevails in the rest rooms and auditorium. In one corner of the lobby is a long candy bar and drink machine.

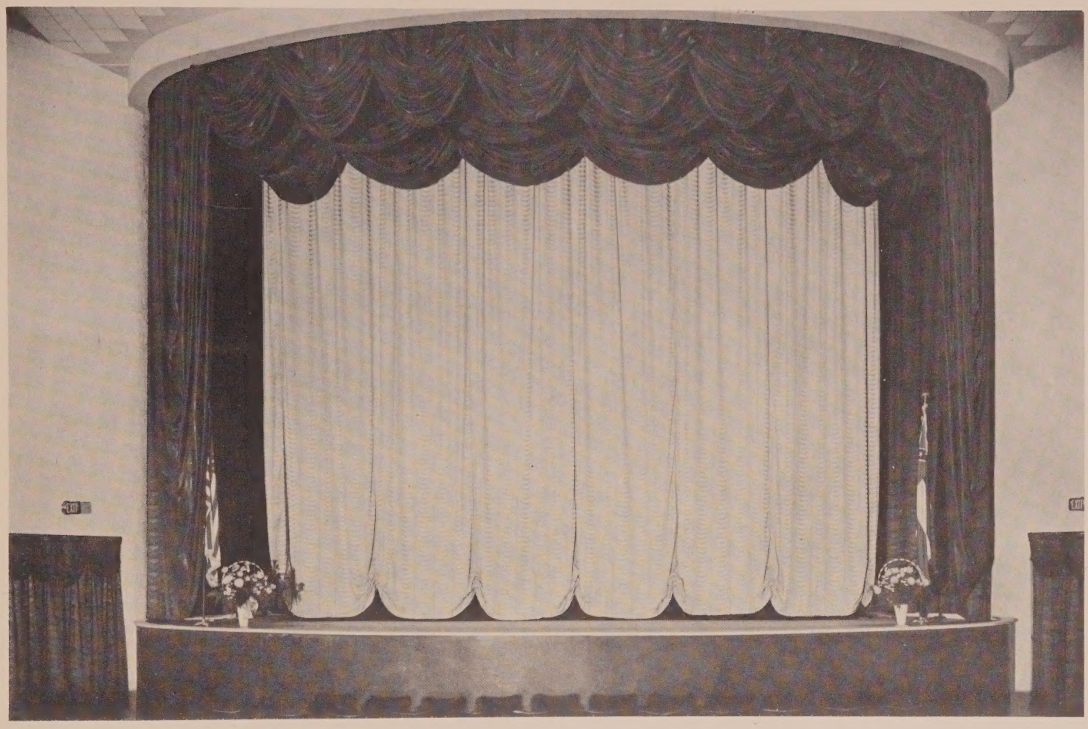
Special features include two stores in front, a cry room, special stage arrangement, and an apartment above theatre.



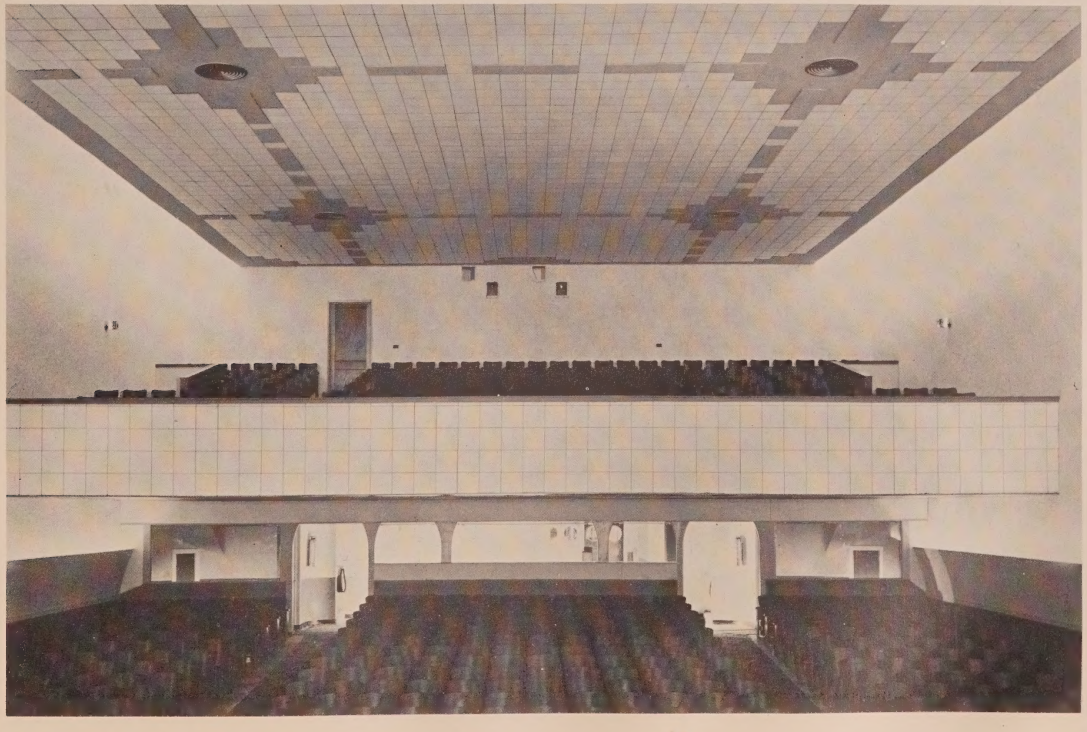
REFERENCE DATA

OWNER: L. E. Downing.
OPERATOR: George Brooks & James Smith.
ARCHITECT: Howard Ryan.
SEATING CAPACITY: 796.
COST OF BUILDING: $65,000.
COST OF EQUIPMENT (including air conditioning): $35,000.
SIZE OF LOT: 50′ x 200′.

Carpets: Mohawk Carpet Mills, Inc.
Chairs: Griggs Equip. Co.
Curtain Controls & Track: Hubert Mitchell Industries, Inc.
Draperies & Stage Curtains: Hubert Mitchell Industries, Inc.
Lenses: Bausch & Lomb Optical Co. F 2.0.
Projection Lamps: C. S. Ashcraft Mfg. Co.
Projection Machines: Wenzel Projector Co.
Rectifiers: Baldor Electric Co. Rect-O-Lite.
Screen: RCA.
Sound: Western Electric.
Supply Dealer: Southeastern Theatre Equip. Co. of La., National Theatre Supply, Monarch Theatre Supply.
Wall Fabrics: Frankel Associates, Inc.



THE GLAMOROUS SETTING formed by the contour curtain around the semi-oval stage and the rose-white indirect lighting add length and height to the auditorium. Wine and gold drapes complement an overall color scheme of burgundy and green on the walls. The acoustical ceiling is white.



EL RANCHO •

Victorville, Calif.

Serving a drawing area of 5,000, populated mainly by ranch and cement workers, the El Rancho shows first-run pictures on a three-change-per-week basis.

The handsome flagstone exterior is surmounted by a false front of frame and stucco with the theatre name spelled out in large letters across the face. Attraction boards project from either end.

Patrons proceed from an outside lobby finished in green plaster into a foyer with light green walls and white ceiling.

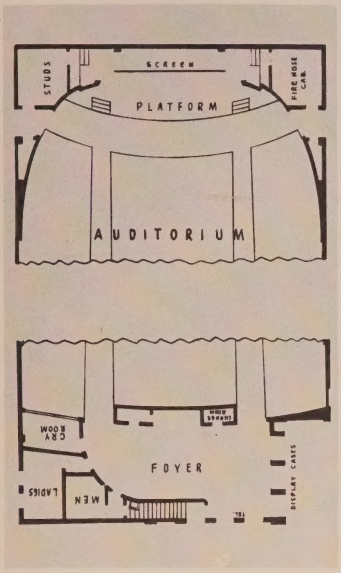
Rest rooms, cry room, and candy bar are all located at one side.

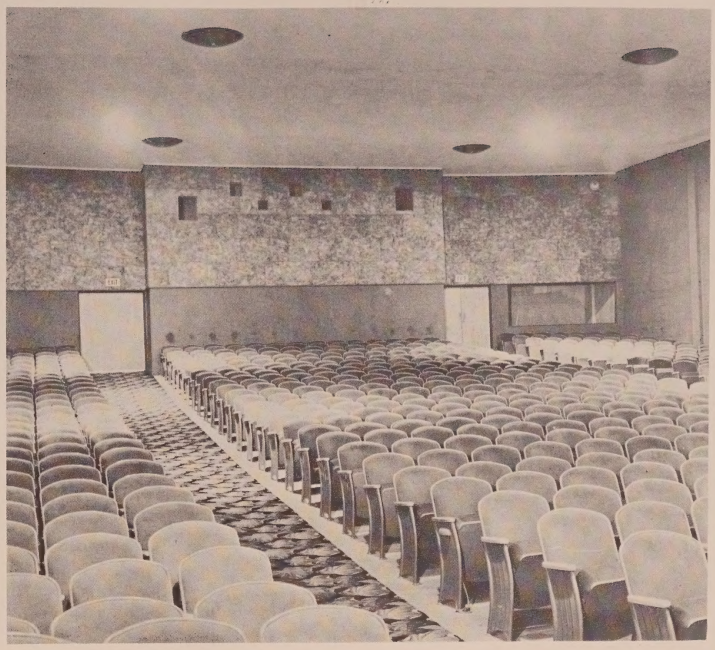
There is no wall lighting as such in the auditorium of the house, which opened July 26, 1950. Two circuit diffused lights are installed in the ceiling for bright and running lights.

REFERENCE DATA

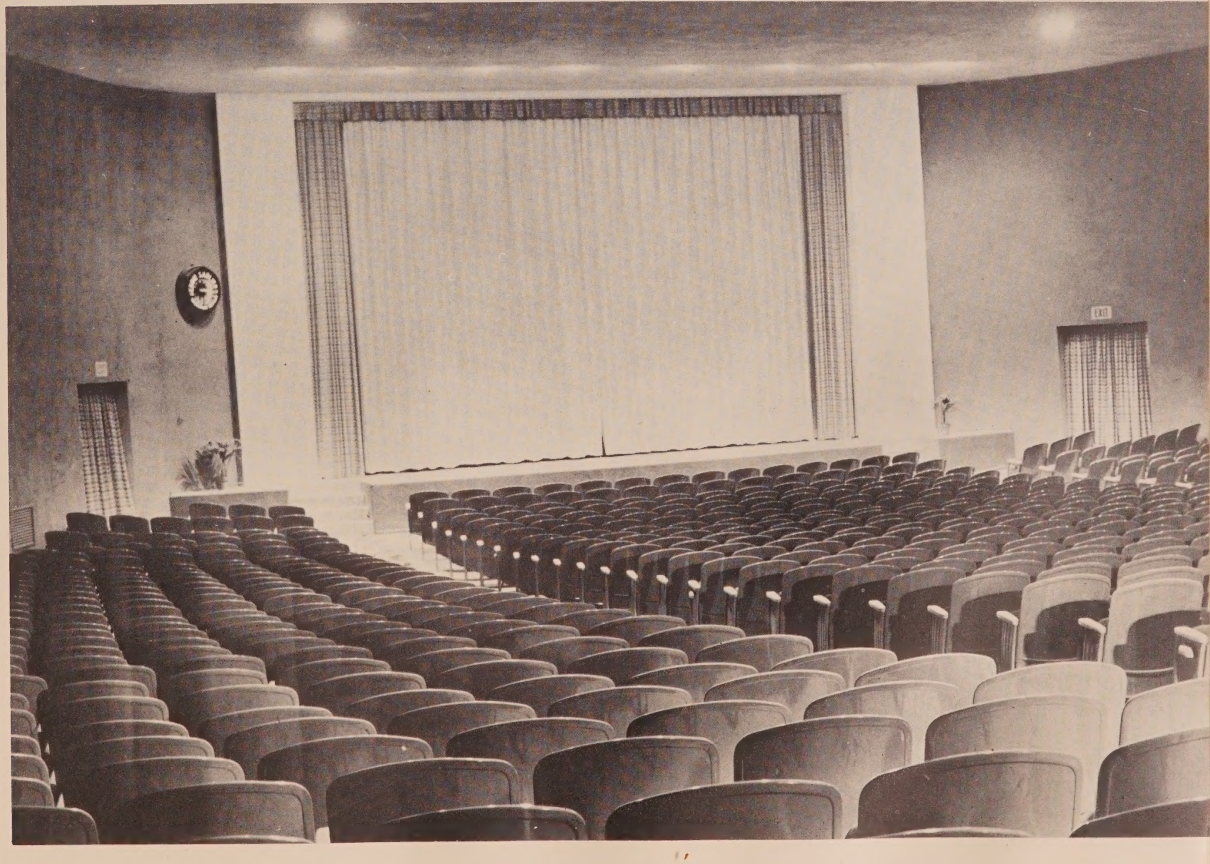
OWNER & OPERATOR: Western Amusement Co., Inc.
ARCHITECT: Howard Elwell.
SEATING CAPACITY: 854.
COST OF BUILDING: $70,000.
COST OF EQUIPMENT (including air conditioning): $30,000.

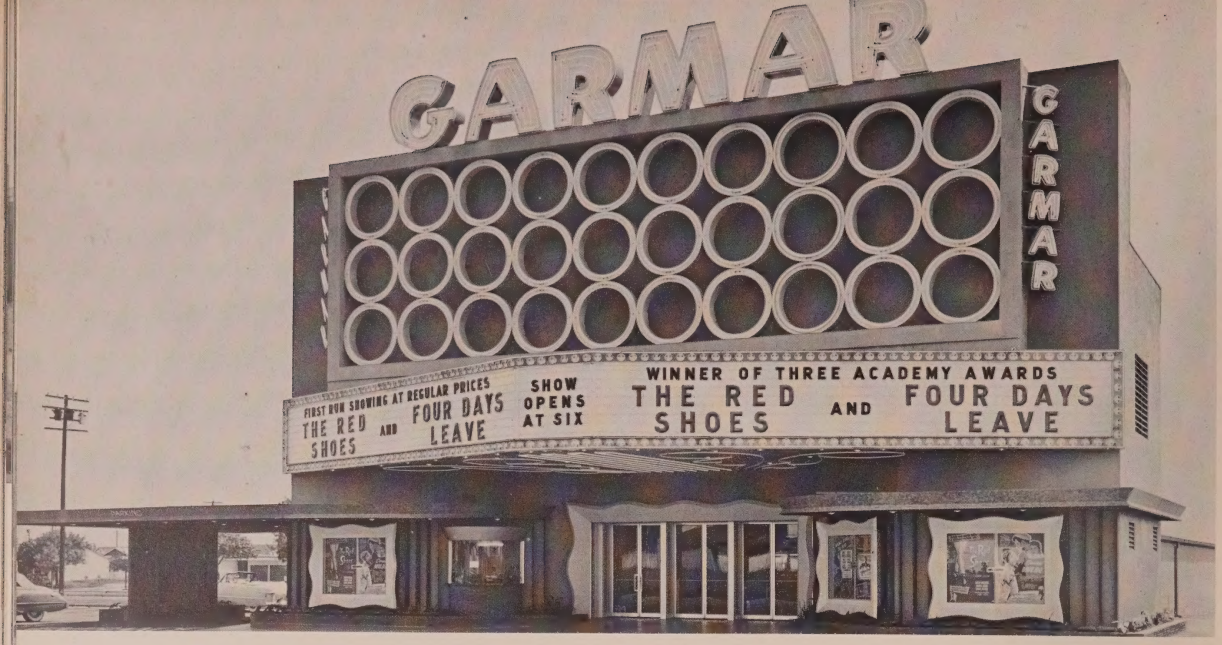
Air Conditioning: U. S. Air Conditioning Corp.
Carpets: Alexander Smith & Sons Carpet Co.
Chairs: Heywood-Wakefield Co.
Display Frames: Theatre Specialties, Inc.
Lenses: Kollmorgen Optical Corp. F 1.9.
Projection Lamps: J. E. McAuley Mfg. Co. Peerless.
Projection Machines: International Projector Corp. Super Simplex.
Rectifiers: RCA.
Rewinders: Goldberg Bros.
Screen: RCA.
Sign & Marquee: Q. R. S. Neon Co.
Sign Letters: Theatre Specialties, Inc. Bevelite.
Sound: RCA.
Supply Dealer: National Theatre Supply, B. F. Shearer Co.





MOSS GREEN WALLS in the auditorium contrast nicely with a light ochre ceiling and a plain white proscenium. The picture window of the cry room may be seen at right in rear view.





GARMAR •

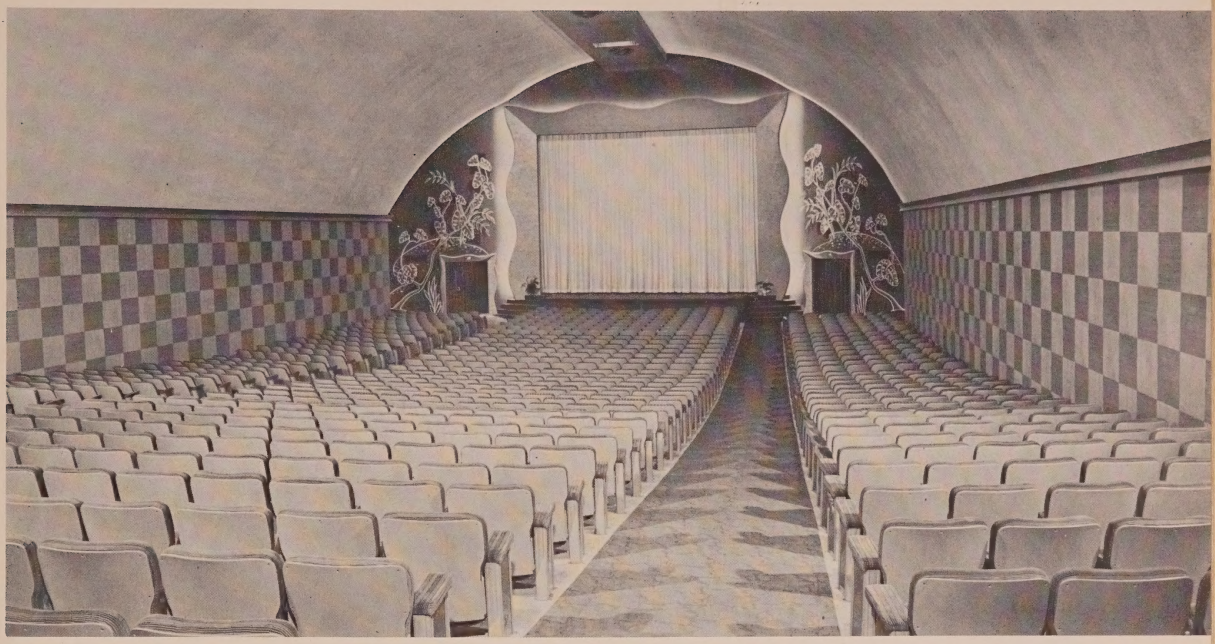
Montebello, Calif.

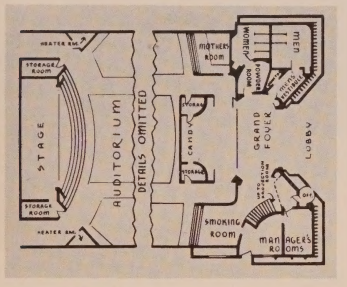
Opened March 29, 1950, the Garmar is located in a central business district and serves community workers with area first-run pictures. The population of the drawing area is approximately 75,000.

A concrete and plaster structure, the house has a lamella roof. The front is trimmed in copper and stainless steel with green and coral circular neon on the facade above the double marquee.

The walls of the lobby and foyer are done in pastel colors with tone-on-tone carpeting covering the floor and indirect lighting. The front of the candy counter and doors leading to the green terrazzo rest rooms are paneled in redwood.

Walls of the auditorium are also done in pastel shades with combed plywood sides. A special smoking room and cry room add to patron convenience.



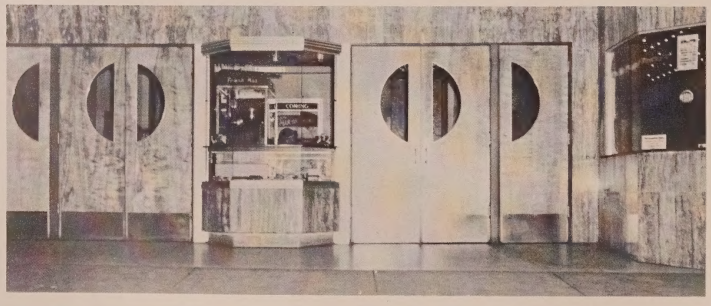


FLORAL DESIGNS at sides aid in setting off the "pie crust" screen frame in the auditorium which is lighted by neon behind. The glass in left rear is front of cry room, while that in right rear is smoking room. Note floor plan above.

REFERENCE DATA

OWNER: S. & A. J. Olander.
OPERATOR: A. J. Olander.
ARCHITECT: S. Charles Lee.
SEATING CAPACITY: 998.
COST OF BUILDING: $130,000.
COST OF EQUIPMENT: $40,000.

Carpets: A. & M. Karagheusian, Inc. Gulistan.
Chairs: Heywood-Wakefield Co.
Decorator: Tony Heinsberger.
Draperies & Stage Curtains: B. F. Shearer Co.
Lenses: Bausch & Lomb Optical Co. F 2.0.
Projection Lamps: Strong Electric Corp. Mogul.
Projection Machines: Motiograph, Inc. AA.
Rewinders: Goldberg Bros.
Screen: B. F. Shearer Co. Starke Cycloramic.
Sign Letters: Theatre Specialties, Inc. Bevelite.
Sound: Motiograph, Inc. Mirrophonic.
Supply Dealer: B. F. Shearer Co.
Ticket Issuing Machine: General Register Corp.
Vending Machines: Manley, Inc.



THE COMPACT REFRESHMENT STAND is located so that it can serve both passersby on the outside and patrons in the foyer. The terrazzo floor of foyer harmonizes with pastel plaster and Formica walls.

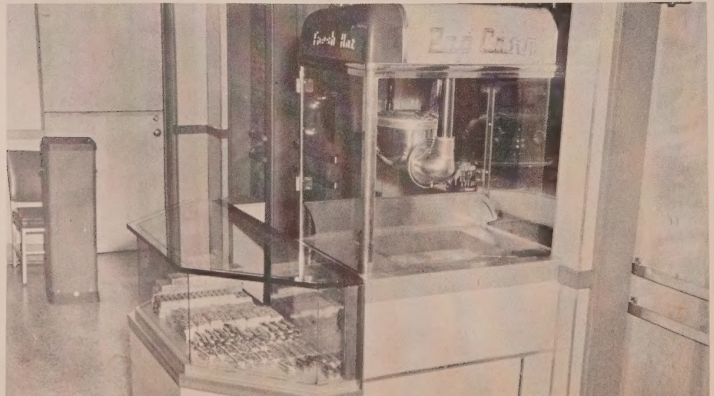
TUSCUMBIAN •

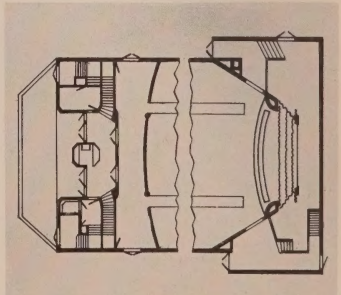
Tuscumbia, Ala.

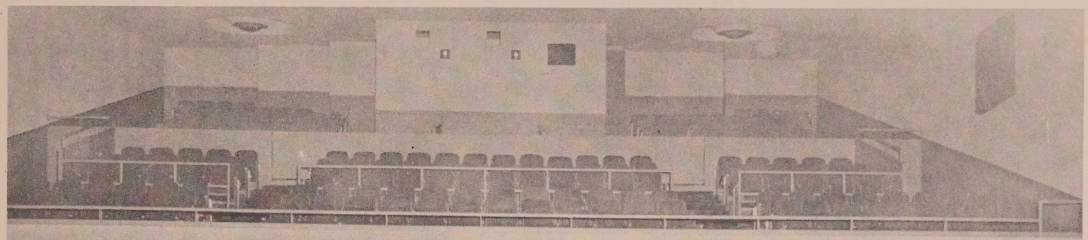
Located in a downtown business section, the first-run Tuscumbian was opened October 12, 1950. Top features are shown for a 45c adult admission scale.

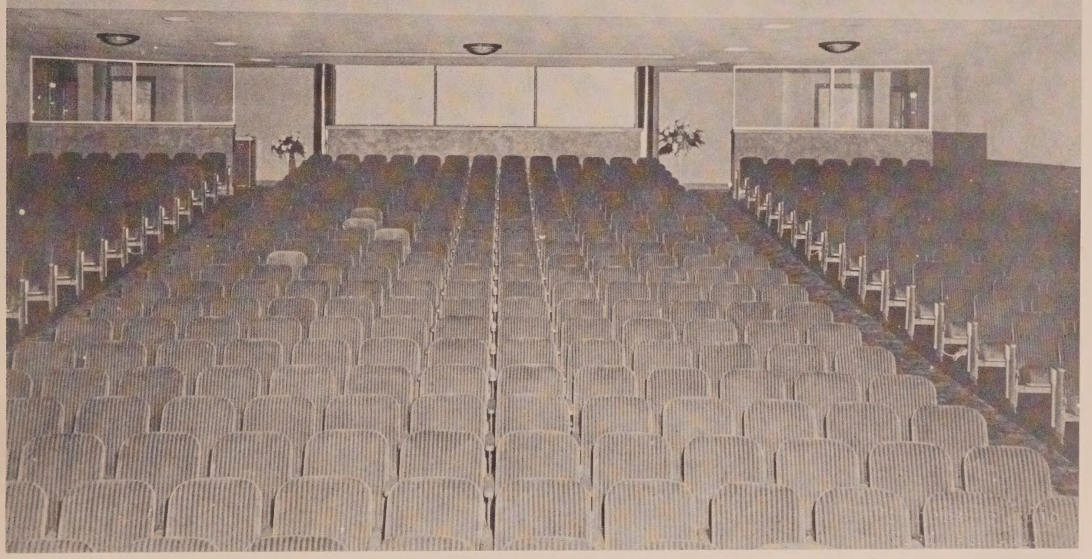
Brick sides enclose a gorgeous facade of white Georgia marble. The massive marquee extends the full length of the front and has white, red, and blue neon tubes on the under-surface.

Pastel shades of green and yellow form the color scheme of the lobby, foyer, lounges, and rest rooms. The auditorium is done in green and lighted by indirect neon tubes of warm white and blue.





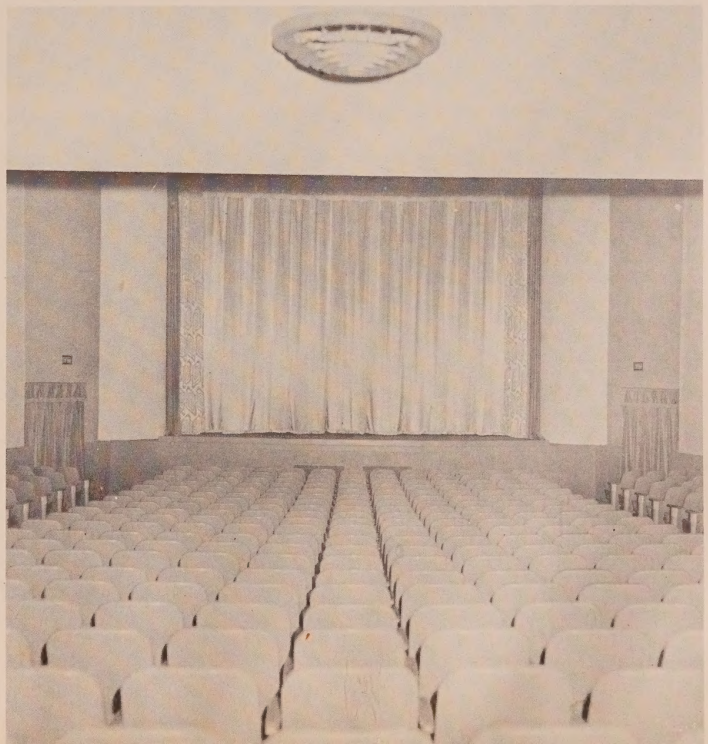




REFERENCE DATA

OWNER & OPERATOR: Muscle Shoals Theatres.
ARCHITECT: Marr & Holman.
SEATING CAPACITY: 869.
SIZE OF LOT: 69′ x 115′.

Chairs: Kroehler Mfg. Co.
Curtain Controls & Track: Automatic Devices Co.
Decorator: Nashville Decorating Co.
Display Frames: Universal Corp.
Draperies & Stage Curtains: Hubert Mitchell Industries.
Lenses: Bausch & Lomb Optical Co.
Projection Lamps: J. E. McAuley Mfg. Co. Peerless.
Projection Machines: Century Projector Corp. "CC".
Rectifiers: Strong Electric Corp.
Rewinders: GoldE Mfg. Co.
Screen: Walker-American Corp. P.M.
Sign & Marquee: Columbia Neon Sign.
Sign Letters: Adler Silhouette Letter Co.
Sound: Century Projector Corp.
Supply Dealer: Capital City Supply Co., Inc., National Theatre Supply, The Queen Feature Service, Inc.
Ticket Issuing Machine: GoldE Mfg. Co.
Vending Machines: Manley, Inc.



SHORE •

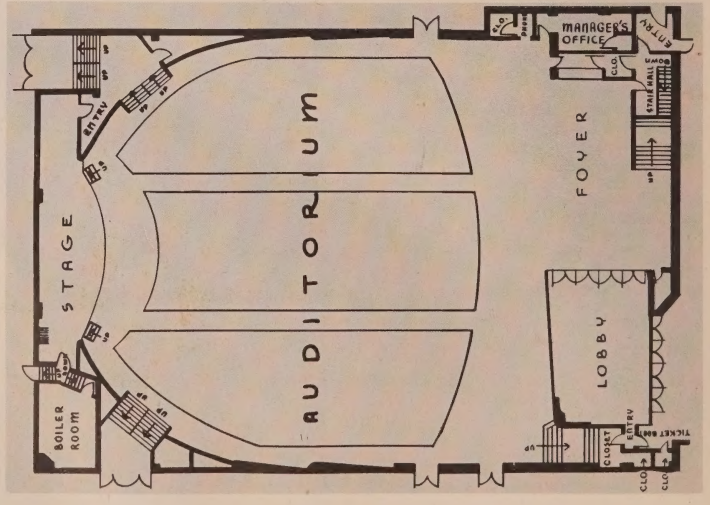
Huntington, L. I., N. Y.

An important element in a modern shopping center with ample parking facilities, the Shore was opened April 8, 1950. The patronage served is a well-to-do, middle-class suburban one.

The colonial front is of red brick, limestone, and white wood with crab orchard stone trim around the stainless steel boxoffice. A protective canopy replaces the usual marquee, and large poster cases are used in lieu of attraction boards.

Entering patrons pass through a broad lobby with green plaster walls above marble bases and a colored flagstone floor into a large foyer. The walls here are also green above pickled oak wainscoting, while the ceiling is off-white. Carpeting is a leaf pattern of red on gray.

The foyer staircase, at the left of which is a candy stand near the turn into the auditorium, leads to a luxurious mezzanine lounge that forms a curving corridor around the men's and women's rooms.

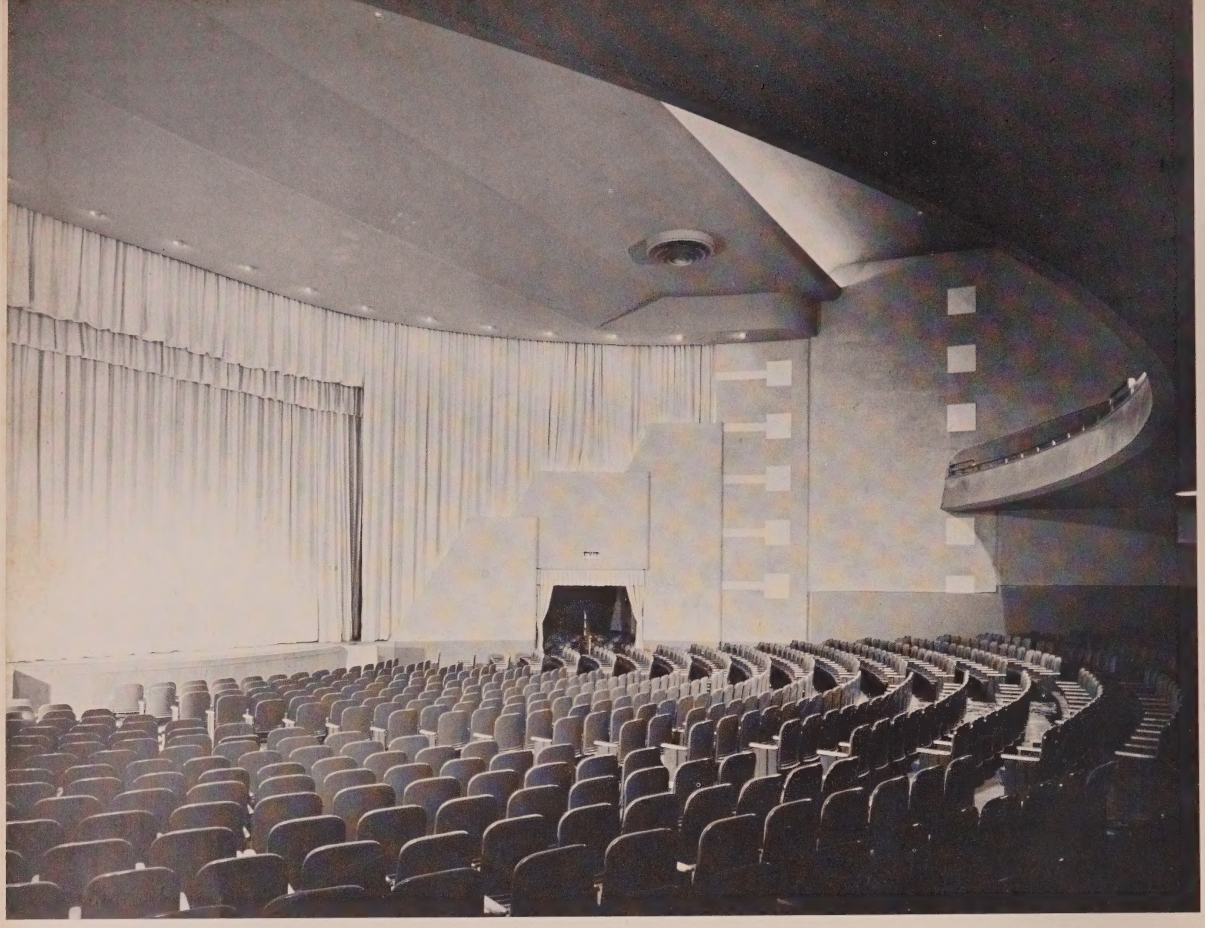


ON ENTERING LOBBY, patrons are confronted by a broad display case, above which the ceiling is coved. The cove extends around to a corner plant box illuminated by downlights also. In one corner of the carpeted foyer is a refreshment stand and a staircase leading to a mezzanine lounge.

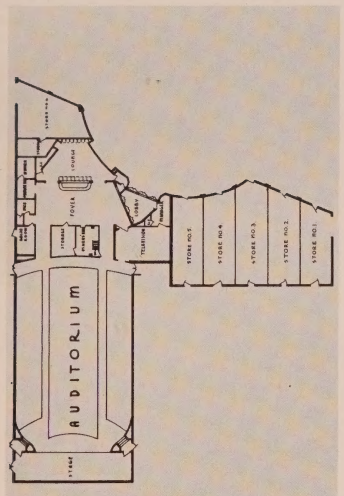
REFERENCE DATA

OWNER & OPERATOR: Century Theatres.
ARCHITECT: John J. McNamara.
SEATING CAPACITY: 1,630.

Chairs: Krohler Mfg. Co., American Seating Co.
Curtain Controls & Track: Rau Studios.
Decorator: Rau Studios.
Draperies & Stage Curtains: Rau Studios.
Generators: Hertner Electric Co.
Lenses: Bausch & Lomb Optical Co.
Projection Lamps: J. E. McAuley Mfg. Co. Peerless.
Projection Machines: International Projector Corp. Simplex X-L.
Screen: Raytone Screen Co.
Sign & Marquee: Claude Neon Products.
Sound: RCA.
Ticket Issuing Machine: General Register Corp.
Ticket Chopper: General Register Corp.
Vending Machines: C. Cretors & Co.
Wall Fabrics: Frankel Associates, Inc.; Maharam Fabric Corp.



THE GREEN SIDE WALLS of the auditorium with hard plaster ornamental inserts step down toward the front to form a contoured opening dramatically draped in yellow. The coved ceiling contains white and green cold cathode lighting, while balcony soffit has baffled dome fixtures.



BEACH •

Cape May, N. J.

Focal point of a modern store block in a famed seashore resort, the first-run Beach was opened June 29, 1950, as the latest luxury house in the Hunt Circuit.

The all-white colonial front, with a canopy which extends the full length of the building, is set off by a beautiful landscaped area in the foreground. Flagstone and terrazzo walks form the approaches.

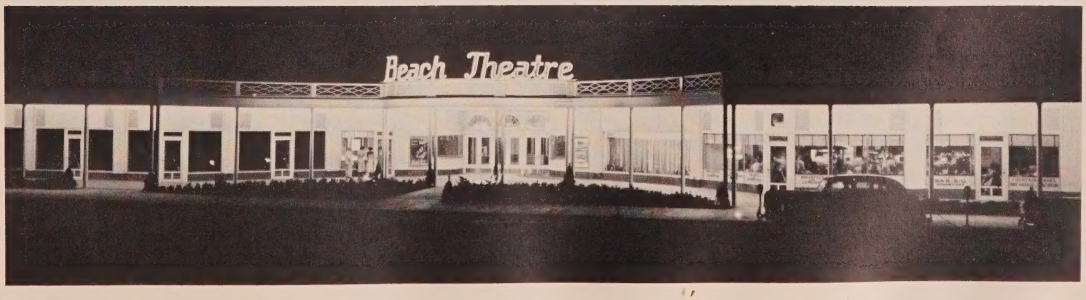
From the small bone-white lobby patrons enter a magnificent foyer with crystal chandeliers, green and gold carpeting, and paneled mahogany side walls with lighted scenes of old Cape May. Behind the refreshment counter are tables and chairs.

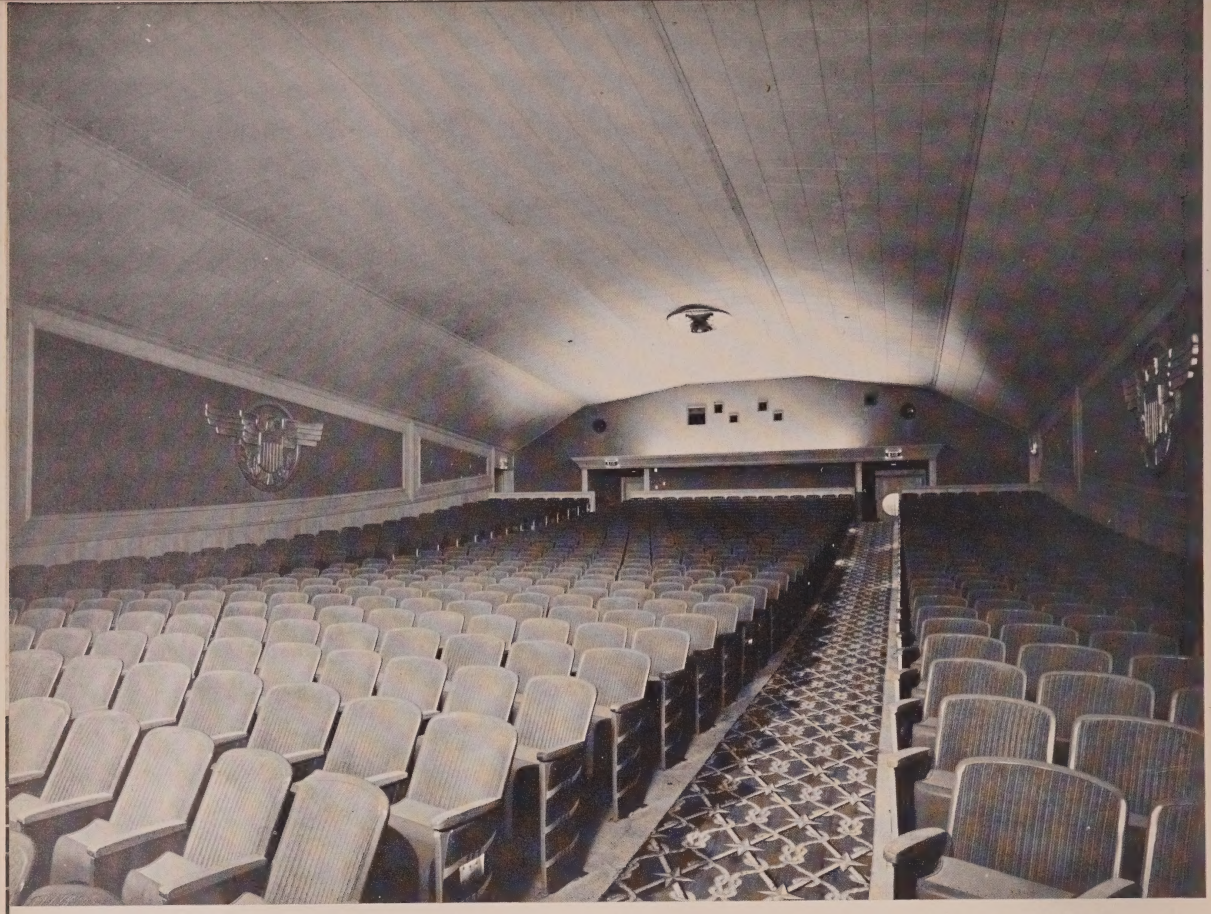
At one side of the foyer are the rest rooms and at the other a special television lounge. Doors in the center lead into a gorgeously appointed auditorium.

REFERENCE DATA

OWNER & OPERATOR: Hunt's Theatres, Inc.
ARCHITECT: W. H. Lee.
SEATING CAPACITY: 806.
SIZE OF LOT: 200′ x 200′.

Carpets: Alexander Smith & Sons.
Chairs: International Seating Co.
Curtain Controls & Track: Vallen, Inc.
Decorator: David E. Brodsky & Assoc.
Draperies & Stage Curtains: David E. Brodsky & Assoc.
Generators: Century Electric Co.
Lenses: Kollmorgen Optical Corp.
Lighting Fixtures: Voigt Co.
Projection Lamps: RCA.
Projection Machines: RCA.
Screen: RCA Snowhite.
Sign & Marquee: Apex Sign Co.
Supply Dealer: Blumberg Bros.
Ticket Issuing Machine: General Register Corp.
Wall Fabrics: Frankel Associates, Inc.





TWO EAGLES WITH WINGS SPREAD FULL dominate the patriotic motif of the huge gold medallions mounted on the green side walls of the auditorium. The paneled wainscoting and mouldings are of Philippine mahogany.

BELOW: Behind the foyer candy counter, with its quilted leatherette front and glass top, is a comfortable lounge with tables and chairs. On the walls are hung scenic murals, while chandeliers hang from the ceiling.

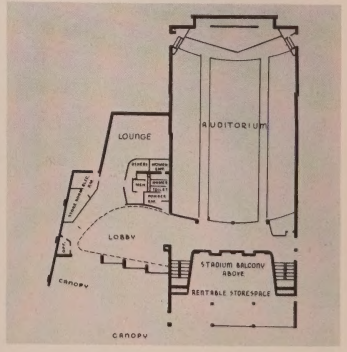
SHIRRED DAMASK FABRIC IN GOLD is carried from the side walls around to the opening for the screen in this view of the auditorium. The borders of the proscenium are green and rose, while the screen curtain is pink. BELOW: The television lounge off the foyer accommodates 40 patrons and offers regular video programs over a 19-inch receiver. This special facility offers a popular way to spend the time between film shows.

REFERENCE DATA

OWNER: American Community Builders.
OPERATOR: H. & E. Balaban Corp.
ARCHITECT: Loebl, Schlossman & Bennett.
SEATING CAPACITY: 1,050.

Chairs: Kroehler Mfg. Co.
Curtain Controls & Track: Automatic Devices Co.
Decorator: Hanns R. Teichert Co.
Generators: Century Electric Co.
Projection Lamps: J. E. McAuley Mfg. Co. Peerless.
Projection Machines: RCA.
Rewinders: GoldE Mfg. Co.
Screen: RCA.
Sign & Marquee: Whiteway Sign Co.
Sign Letters: Adler Silhouette Letter Co.
Sound: RCA.
Supply Dealer: Abbott Theatre Supply.
Ticket Issuing Machine: General Register Corp.
Ticket Chopper: GoldE Mfg. Co.

SELDOM has a theatre, large or small, captured a mood of relaxation in every section as perfectly as has the Holiday with its intriguing surroundings.



HOLIDAY •

Park Forest, Ill.

Exuding a "holiday" atmosphere in its design, this house was opened November 21, 1950, as part of a modern shopping center with parking accommodations for 1,000 cars.

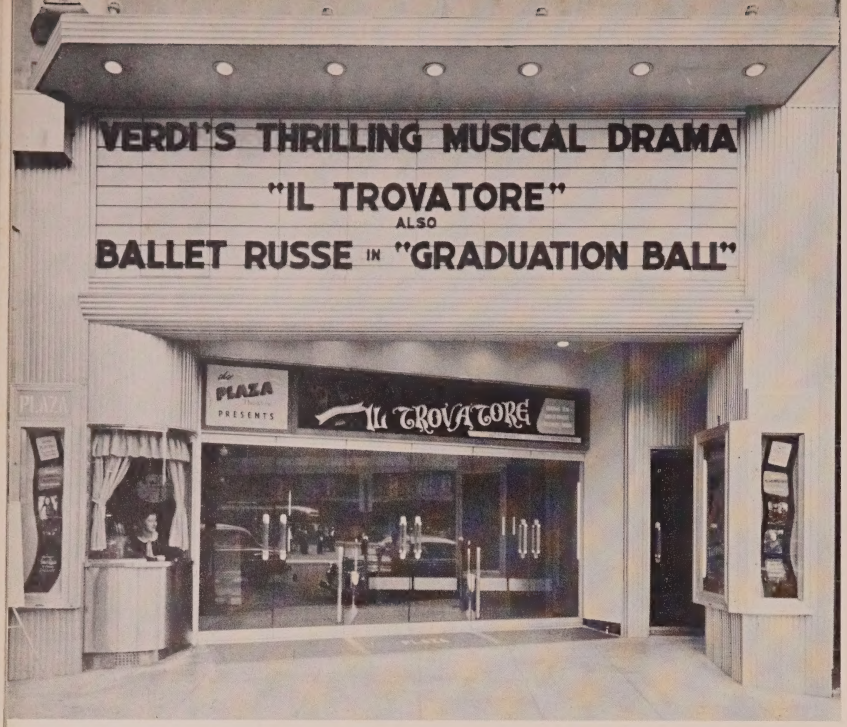
A broad canopy juts from one end of the glass and brick front over a garden-like vestibule. A supporting brick column carries the attraction board on top.

The comfortable living-room type lobby is fitted out with paneled wood walls, a massive chandelier, a fireplace at one end, and full-length picture windows that look out on the shopping center. Carpeting is a tweed pattern of red, black, and Mediterranean blue.

A special coffee and party room just off the lobby provides a daytime meeting place for small clubs and parties for local residents. Coffee is served here during operating hours as a complement to the food served at the lobby refreshment stand.

Other unusual features include the playing of recorded music in the lobby and foyer, a spacious cry room on the main floor, and the sale of tickets from a specially designed desk in the lobby, rather than from a regular boxoffice.

The auditorium is simply but smartly done with off-white painted side walls and wood beam ceiling. The proscenium area with a specially hand-painted curtain is flanked on either side by synthetic trees and greenery above exits.



REFERENCE DATA

OWNER: Plaza Theatre Corp.
OPERATOR: Samuel F. Roth.
DESIGNER: W: L. Drevo.
SEATING CAPACITY: 295.
SIZE OF LOT: 25′ x 115′.

Carpets: Bigelow-Sanford Carpet Co.
Chairs: Heywood-Wakefield Co.
Curtain Controls & Track: Vallen, Inc.
Decorator: Paramount Decorating Co.
Draperies & Stage Curtains: Paramount Decorating Co.
Lenses: Projection Optics Co., Inc.
Lighting Fixtures: Voigt Co., Rem-Lite, Inc.
Projection Lamps: Strong Electric Co.
Projection Machines: Motiograph, Inc.
Rewinders: Goldberg Bros.
Screen: B. F. Shearer Co. Cycloramic.
Sign & Marquee: Claude Neon Sign Co.
Sign Letters: Wagner Sign Service, Inc.
Sound: Motiograph, Inc.
Supply Dealer: J. F. Dusman Co.
Ticket Issuing Machine: General Register Corp.
Ticket Chopper: General Register Corp.
Wall Fabrics: Paramount Decorating Co.; Frankel Associates, Inc.; Maharam Fabric Corp.

PLAZA •

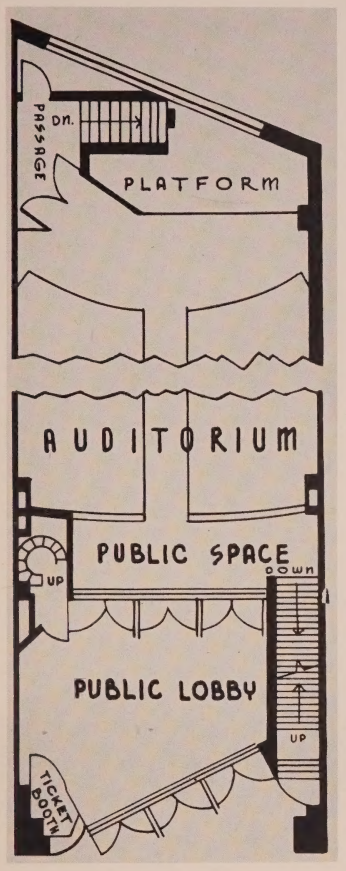
Washington, D. C.

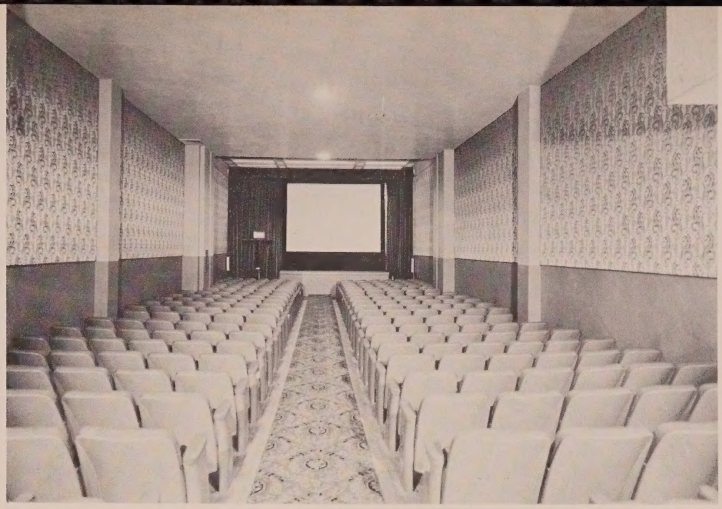
Opened May 1, 1950, the Plaza serves the entertainment needs of a primarily upper-class patronage with international art films. It makes up in luxury whatever it lacks in size.

The front of the concrete brick, and plaster structure is stainless steel and glass. Lighting is fluorescent and cold cathode.

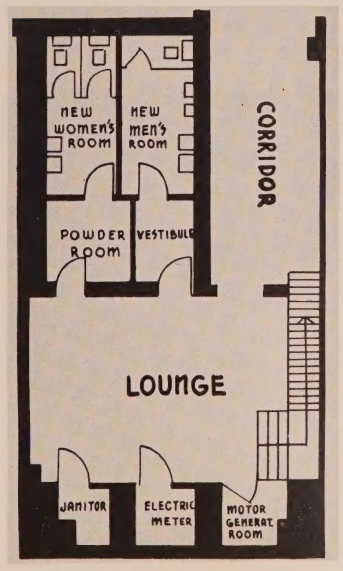
Rubber mats protect the terrazzo floor of the lobby, and one wall is figured with abstract designs. Above the doors leading into foyer are scenes of the nation's capitol. Lighting is gold fluorescent.

Off the pastel-colored foyer are a mirrored lounge with floral displays, tiled rest rooms, an art gallery, and a special television lounge. Doors in center lead into the 295-seat auditorium.





WALL FABRICS of silver and coral brocade, plus a gold lighting scheme, decorate the auditorium, while bright floral patterns beautify the lounge.



PARAMOUNT •

Lethbridge, Canada

A first-run house in the main business section of the city, the new Paramount was opened October 9, 1950. Comedies, musicals, and westerns are most popular.

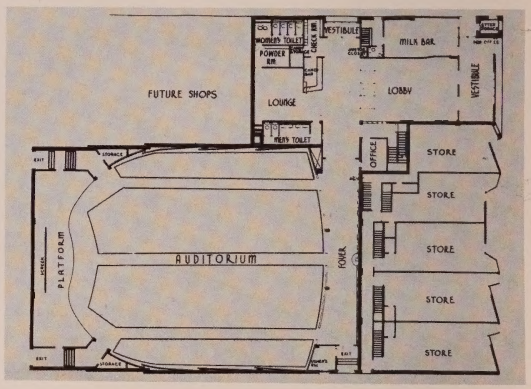
The front of the theatre building, which includes six stores, is a visual type with structural glass and maroon travertine. The high pylon bearing the theatre name is notably impressive at night.

At the far end of the pastel-colored lobby stands the candy bar and next to it the check room. A milk bar is also incorporated into one side of the lobby.

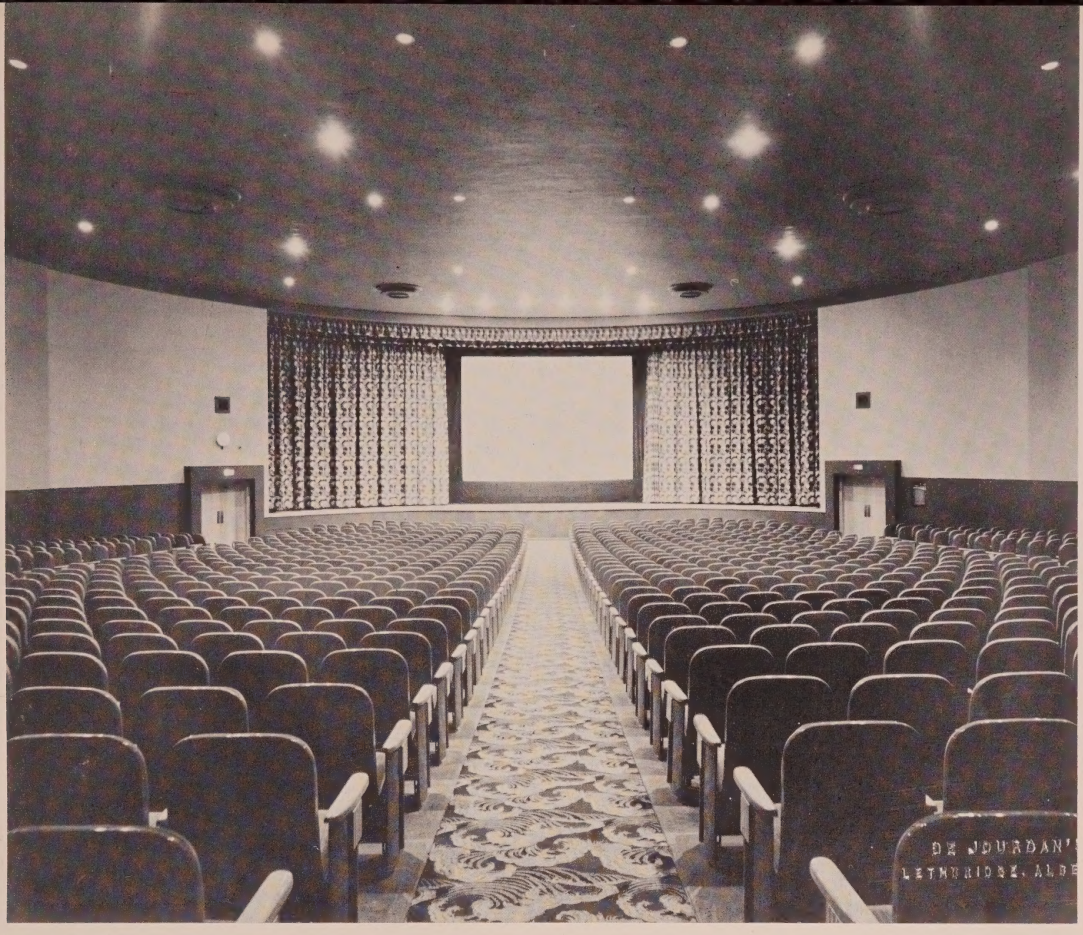
Beyond the candy bar is a spacious lounge with green walls and rose draperies covering one of them. Doors lead to a ladies' room done in mauve and a men's room finished in green.

Off the lobby to the left is the main foyer done in rose with natural birch trim. The standee rail separating the foyer from the auditorium is dunlopillo wood.

A special viewing room for parties, screenings, or children is on second floor.



PLENTY OF PARKING SPACE is available around the building for patrons of the theatre or the adjoining stores. The lobby, like the vestibule, has a visual front and is appealing to the eye with its mirrored walls, rich carpeting, illuminated display cases, and candy bar at far end.

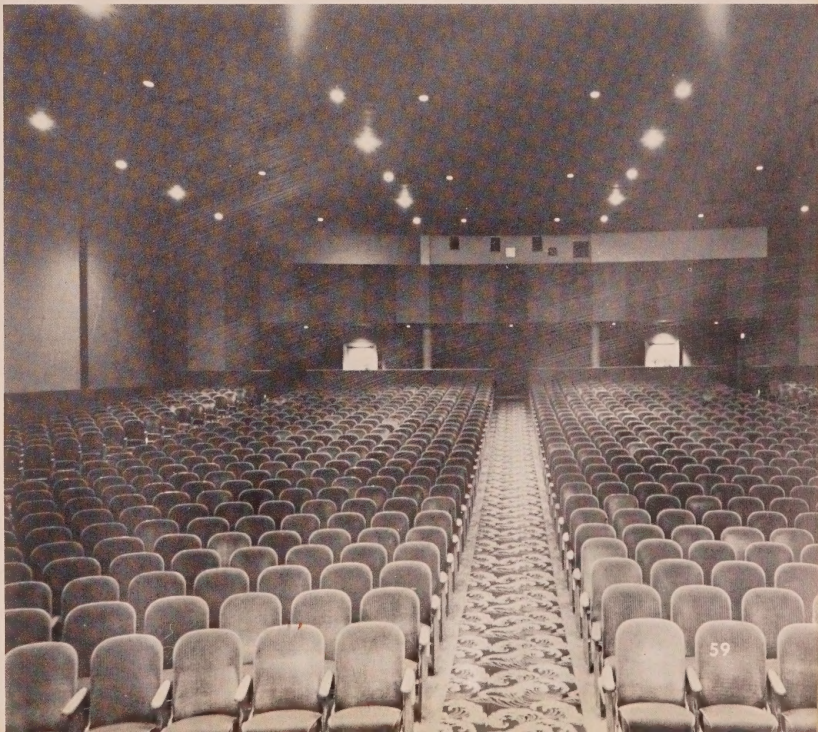


DECOR OF THE AUDITORIUM is quite simple with the walls three panels of different shades of green and a red-violet ceiling profusely studded with downlights. The curvature of the drapes around the plain proscenium tends to draw the audience into the action taking place on screen.

REFERENCE DATA

OWNER & OPERATOR: Majestic Theatres, Ltd.
ARCHITECT: Green, Blankenstein, Russell & Assoc., ASSOCIATE ARCHITECT: Meech, Mitchell & Meech.
SEATING CAPACITY: 1,025.
COST OF BUILDING (including air conditioning): Approx. $325,000.
COST OF EQUIPMENT: $50,000.
SIZE OF LOT: 125′ x 150′.

Carpets: Toronto Carpet Co.
Chairs: Kroehler Mfg. Co.
Draperies & Stage Curtains: Robert Simpson Western, Ltd.
Generators: Hertner Electric Co.
Lenses: Rosskote.
Projection Lamps: J. E. McAuley Mfg. Co. Peerless.
Projection Machines: International Projector Corp. Simplex X-L.
Rewinders: Goldberg Bros.
Screen: Walker-American Corp. P.M.
Sign & Marquee: Baxter Signs.
Sign Letters: Adler Silhouette Letter Co. Red & Green 10″, 12″ plastic.
Sound: International Projector Corp.
Supply Dealer: General Theatre Supply Co., Ltd.



BROOK •

Brooklyn, N. Y.

Located in a densely populated district, the Brook was opened January 25, 1950. It forms one of the most recent additions to the expanding Century circuit.

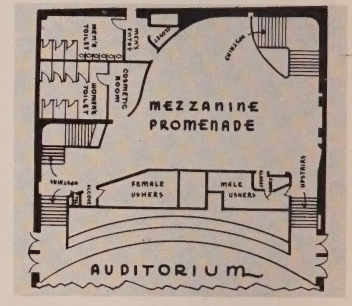
The house has a modern front of light face brick, marble, limestone trim, stainless steel covered columns, and glass.

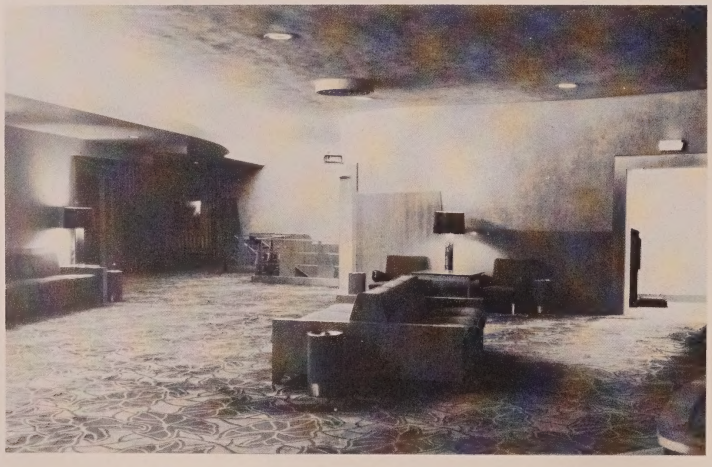
Venetian terrazzo covers the floor of the lobby, while the walls are marble and plaster. Cove and recessed lighting provide illumination.

The foyer is done in pastel shades and is partially paneled in natural wood. Candy, popcorn, and ice cream cabinets are built into a refreshment stand at one side.

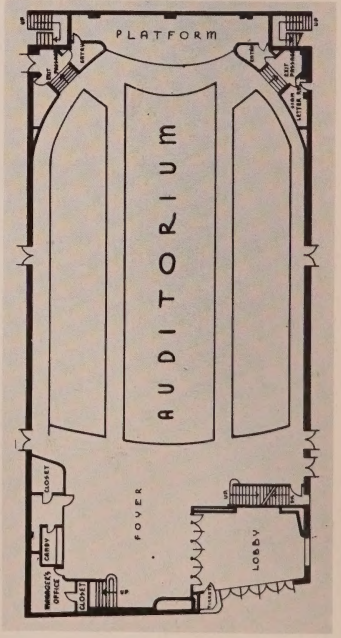
A staircase near the concessions counter ascends to the mezzanine where a handsomely appointed lounge and rest rooms are found.

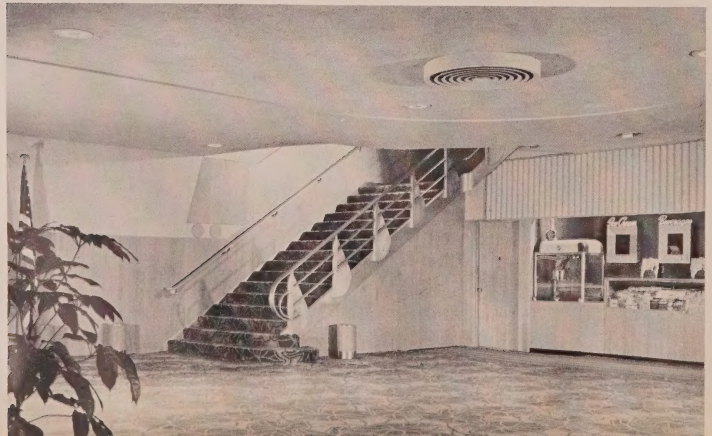
The auditorium has green walls with blond wood trim, red-grey carpeting, downlights, and cold cathode cove lighting.





MAJESTIC ELEGANCE MARKS EVERY SECTION of the Brook from the massive brick, marble, and limestone facade to the furnishings and other appointments of the mezzanine and foyer alike.



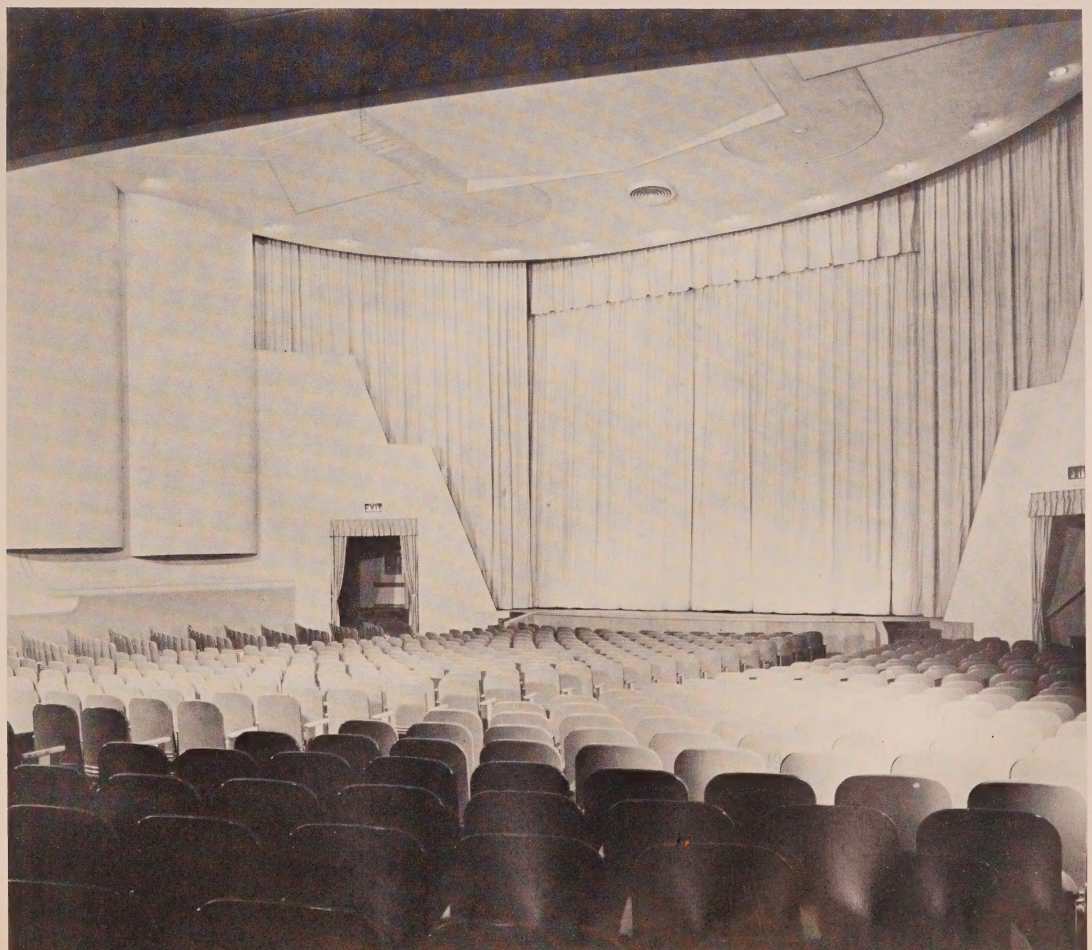


REFERENCE DATA

OWNER & OPERATOR: Century Theatres.
ARCHITECT: John J. McNamara.
SEATING CAPACITY: 1,460.

Carpets: Plymouth Carpet Co.
Chairs: Kroehler Mfg. Co., American Seating Co.
Curtain Controls & Track: Rau Studios.
Decorator: Rau Studios.
Draperies & Stage Curtains: Rau Studios.
Generators: Hertner Electric Co.
Lenses: Bausch & Lomb Optical Co.
Projection Lamps: J. E. McAuley Mfg. Co. Peerless.
Projection Machines: International Projector Corp. Simplex X-L.
Screen: Raytone Screen Co.
Sign & Marquee: Claude Neon Products, Inc.
Sound: RCA.
Ticket Issuing Machine: General Register Corp.
Ticket Chopper: General Register Corp.
Vending Machines: Manley, Inc.
Wall Fabrics: Frankel Associates, Inc.; Maharam Fabric Corp.

RUST DRAPES around proscenium of the auditorium give it an impressive semi-circular effect.



FISKE •

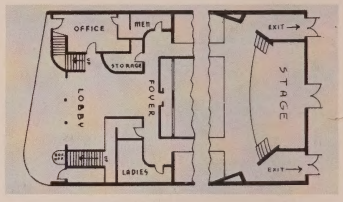
Oak Grove, La.

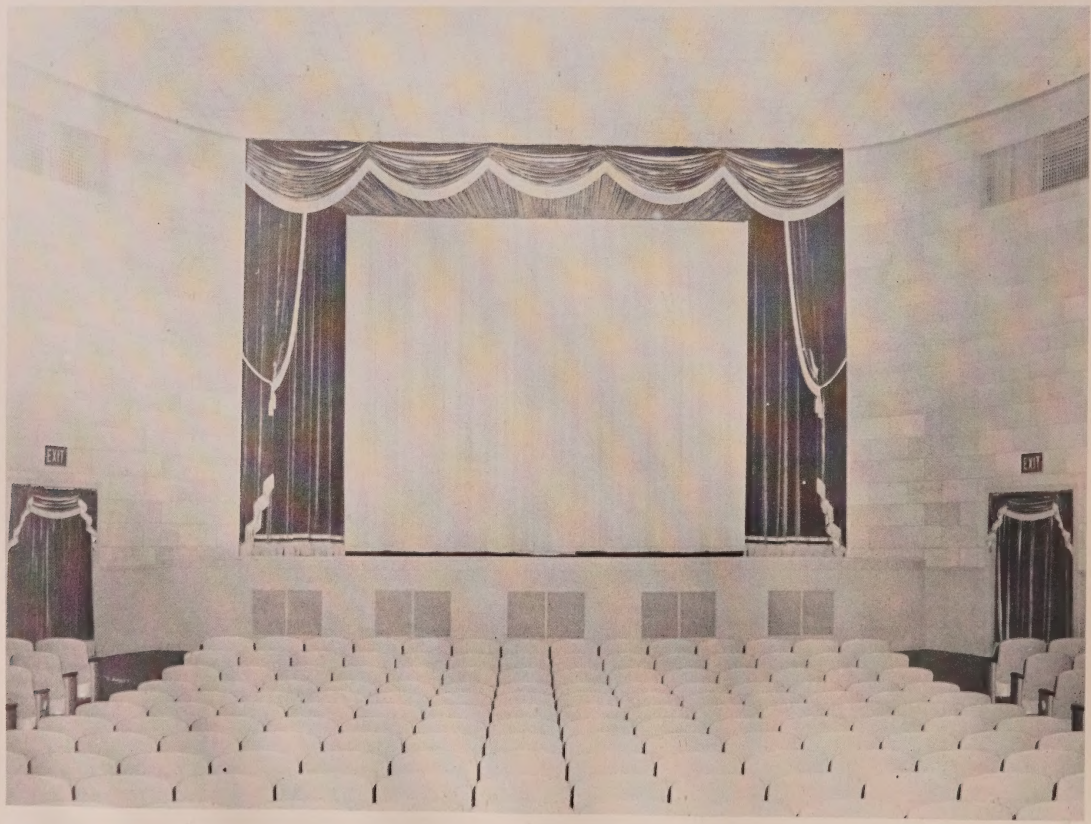
A low-budget, small-town theatre, the Fiske was opened April 17, 1950. First-run westerns and comedies are favored.

The front is finished in red and white which combines with the natural yellow of the brick facade. Glass doors open into a lobby with smooth plaster walls painted light brown and a white ceiling.

A similar color scheme prevails in the foyer, which has a well-equipped refreshment stand at one side. Off this area are tiled rest rooms, the ladies' done in blue and the men's in green. Toilets for colored patrons are in the balcony.

Walls of the auditorium are blue and grey, while the ceiling is cream. Stage drapes are blue, red, and silver. There are hearing aids and a cry room (rear).

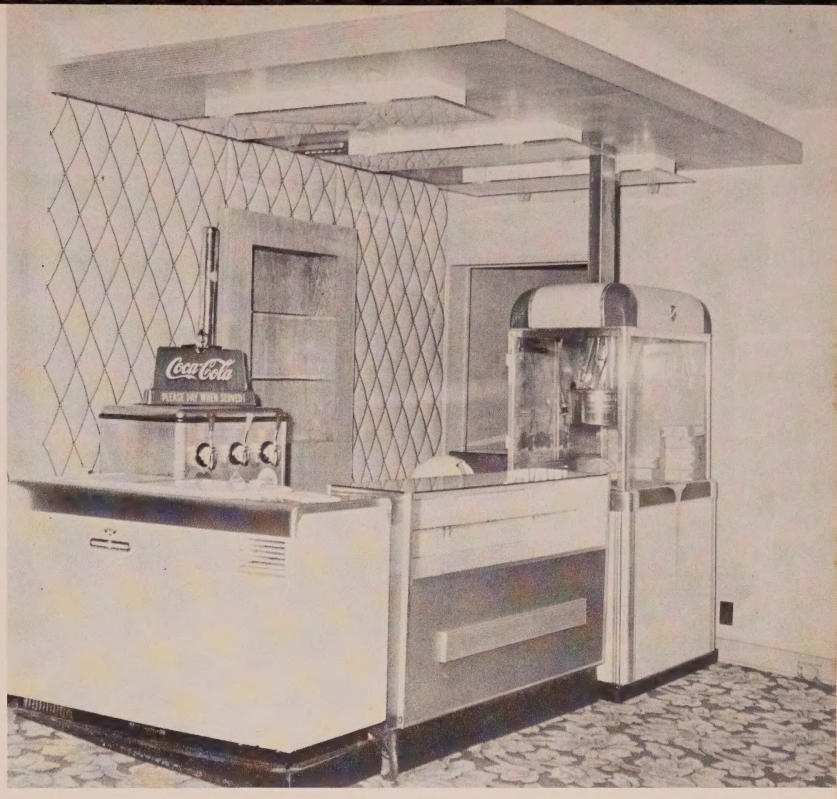


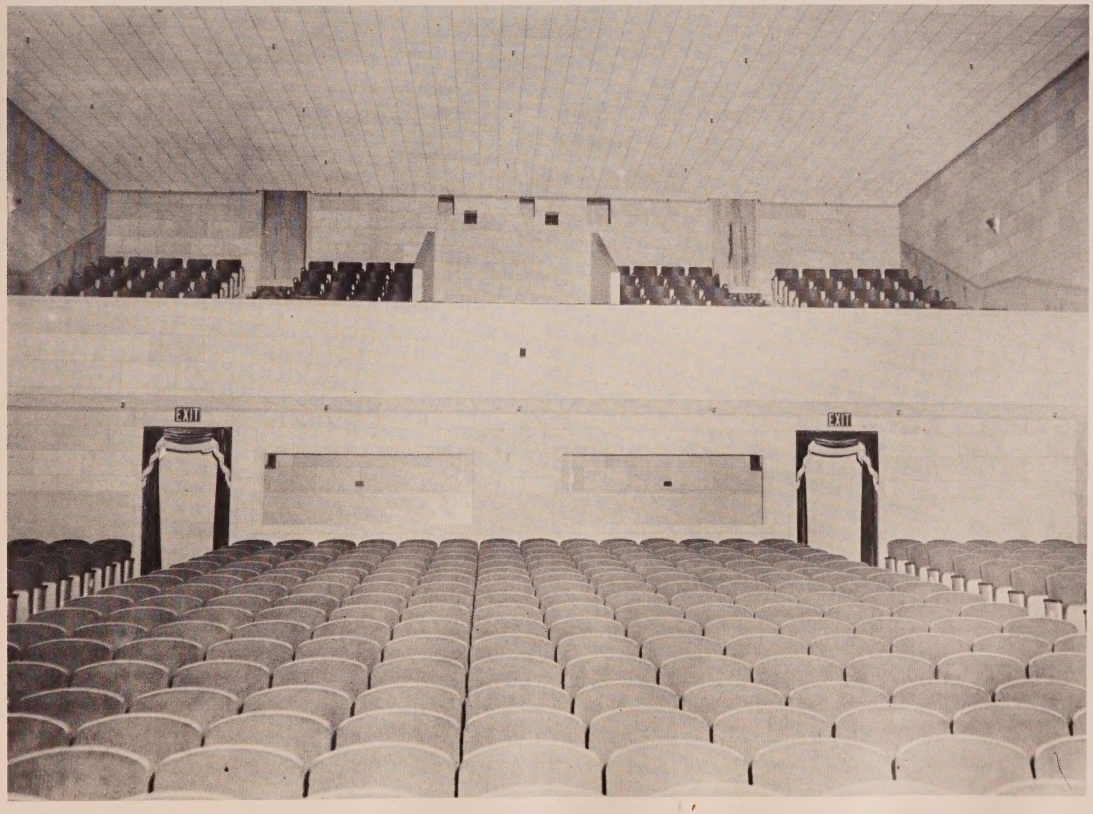


REFERENCE DATA

OWNER & OPERATOR: Donald B. Fiske.
ARCHITECT: B. W. Stevens.
SEATING CAPACITY: 800.
COST OF BUILDING: $85,000.
COST OF EQUIPMENT (including air conditioning): $70,000.
SIZE OF LOT: 50′ x 140′.

Air Conditioning: U. S. Air Conditioning Corp.
Carpets: Fairhill.
Chairs: Irwin Seating Co.
Curtain Controls & Track: Vallen, Inc.
Decorator: B. W. Stevens.
Dimmers: Superior Electric Co.
Draperies & Stage Curtains: Oklahoma City Scenic Co.
Generators: Motiograph, Inc. Hi-Power.
Lenses: Kollmorgen Optical Corp.
Projection Lamps: Strong Electric Corp.
Projection Machines: Motiograph, Inc. AA.
Rewinders: GoldE Mfg. Co.
Screen: B. F. Shearer Co. Cycloramic.
Sign & Marquee: Pelican Sign Co.
Sign Letters: Wagner Sign Service, Inc.
Sound: Motiograph, Inc.
Supply Dealer: Hodges Theatre Supply Co.
Ticket Issuing Machine: General Register Corp.
Wall Fabrics: Maharam Fabric Corp.





FOX •

Missoula, Mont.

Situated just outside the main business section of its community, the Fox was opened December 8, 1949. It is a de luxe first-run house with many features.

The stone, brick, and stainless steel front is topped by a neon-lighted tower with the name "Fox" in giant letters.

Glass doors lead into a lobby carpeted in green and red with indirect lighting. The manager's office is situated here.

Before reaching the foyer, patrons pass through a large outer lounge where a striking metal candy bar stands. Lighted animal murals are on the back wall.

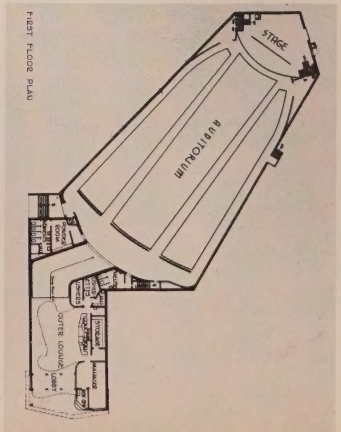
The foyer, off which are the lavatories and personnel rooms, is beautifully appointed with upholstered furniture and Indian lore etchings on the walls.

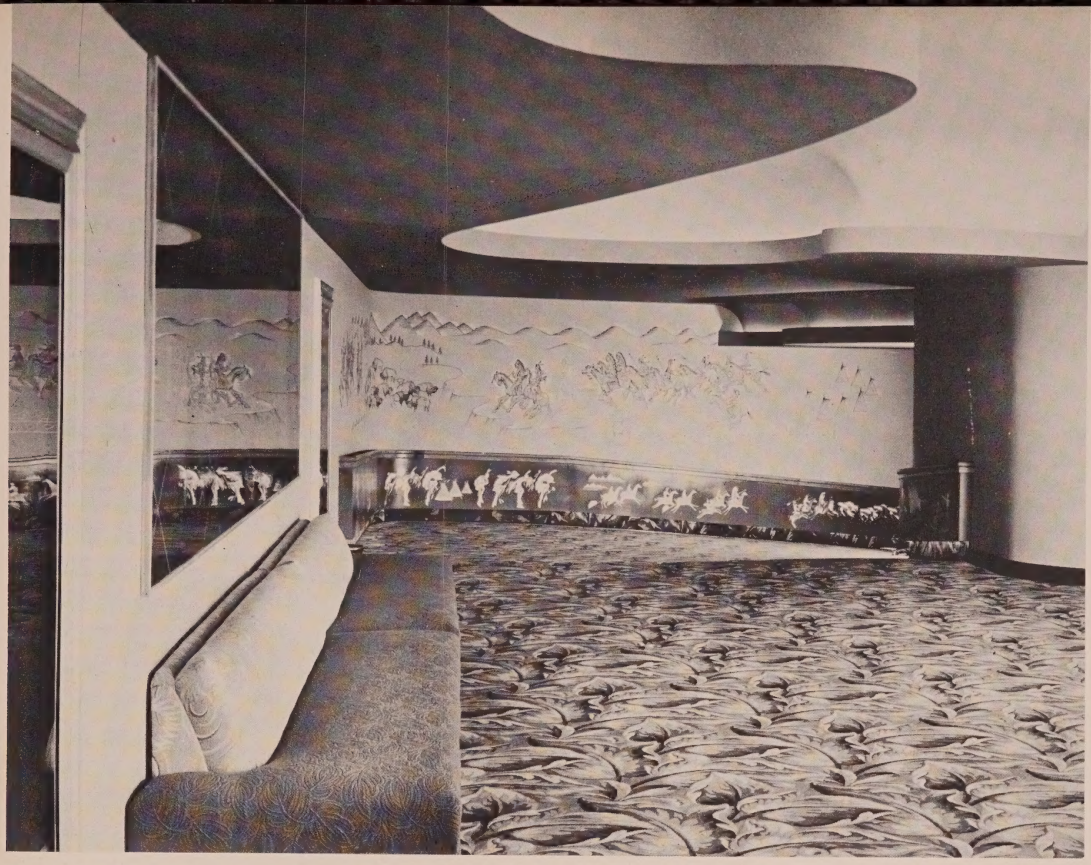
Decoration in the 1050-seat auditorium likewise follows an Indian theme.

REFERENCE DATA

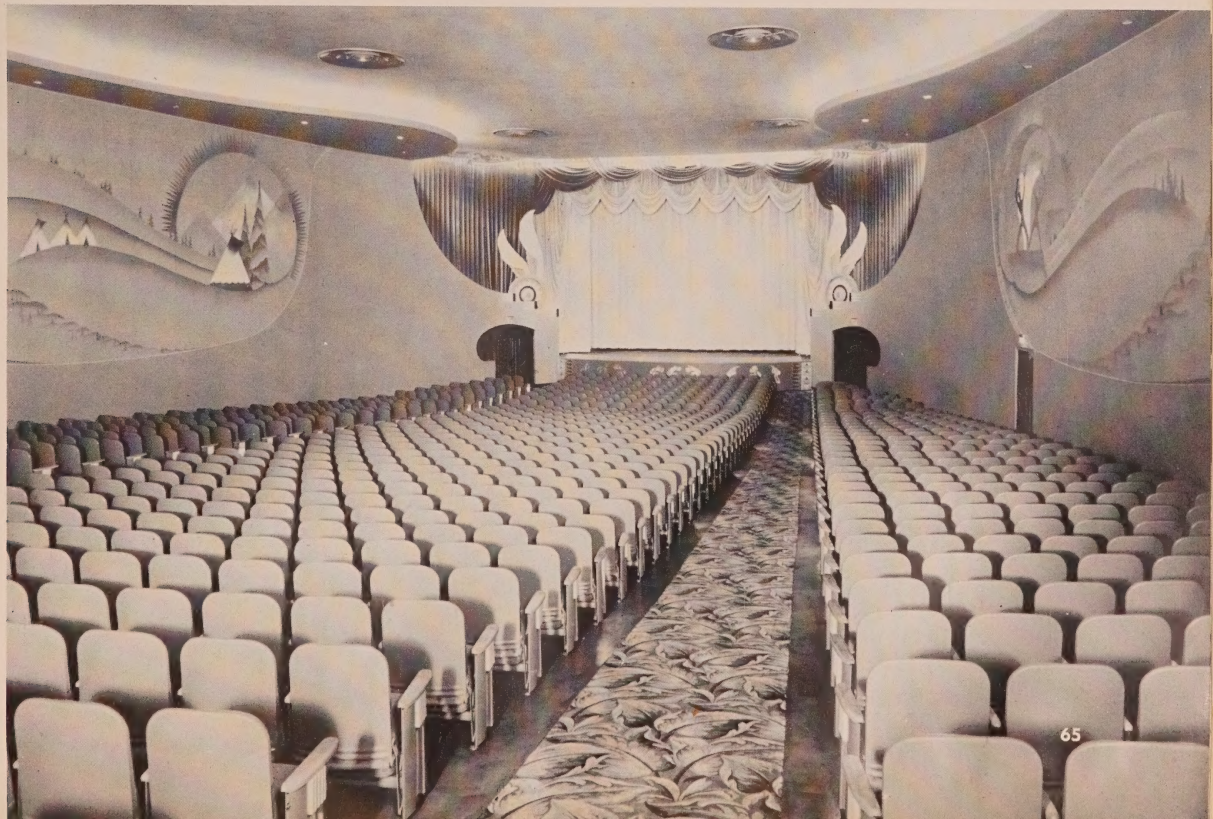
OWNER & OPERATOR: Fox Missoula Theatre Corp.
ARCHITECT: Charles D. Strong.
SEATING CAPACITY: 1,050.
COST OF BUILDING: $264,000.
COST OF EQUIPMENT (including air conditioning): $70,000.

Air Conditioning: U. S. Air Conditioning.
Carpets: Alexander Smith & Sons Carpet Co.
Chairs: Kroehler Mfg. Co.
Decorator: Arnold & Savage.
Display Frames: Theatre Specialties, Inc.
Draperies & Stage Curtains: Great Western Stage Equip. Co.
Generators: Hertner Electric Co.
Lenses: Bausch & Lomb Optical Co.
Projection Lamps: J. E. McAuley Mfg.
Projection Machines: International Projector Corp. Simplex E-7.
Rewinders: GoldE Mfg. Co.
Screen: Walker-American Corp.
Sign & Marquee: Electrical Products Consolidated.
Sign Letters: Wagner Sign Service, Inc.
Sound: International Projector Corp.
Supply Dealer: National Theatre Supply, Western Service & Supply, Inc.
Ticket Issuing Machine: General Register Corp.





THE INDIAN LORE FIGURES in the foyer are effectively set off by cove lighting above, while a large mirror and settee complete the atmosphere of luxury. The days of the "redmen" are also depicted in the auditorium wall murals and by the plaster creations at sides of the stage.



CREST •

Great Bend, Kans.

A first-run house in the main business section of its community, the Crest was opened November 9, 1950. An adult admission of 65c is charged.

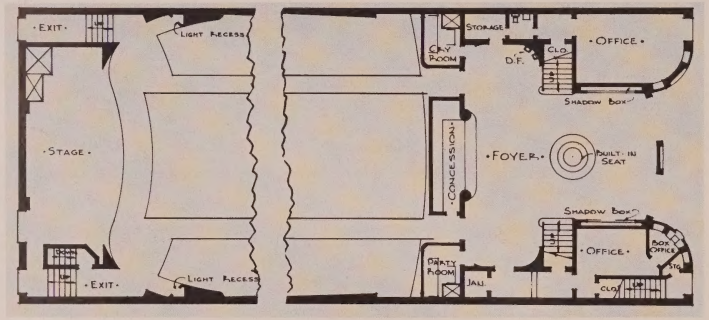
The front is terra cotta in shades of rose buff, azure blue, light yellow, and maroon with glass block panels and ornamental metal.

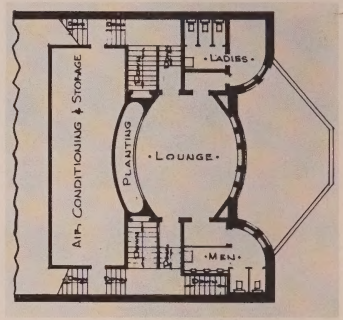
Walls in the combined lobby-foyer area are a dark grey-blue with magenta accents. The ceiling above the indirect lighting coves is off-white.

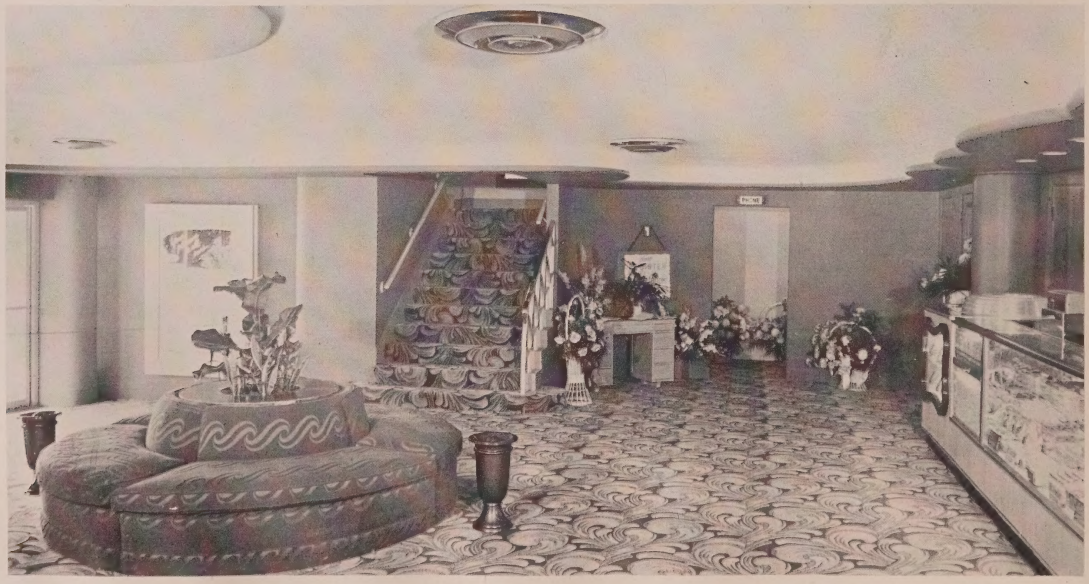
Facing a long refreshment bar is a huge built-in seat with planting in the middle. Other features of interest on the main floor include a small cry room and a party room for special occasions.

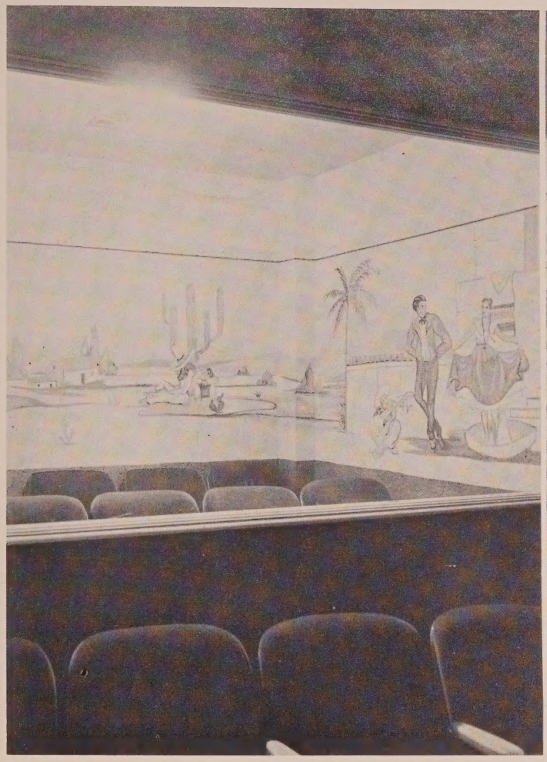
A staircase leads up to a mezzanine with modernistic furniture selected to harmonize with a color scheme similar to that of the lobby. Off this area are the tiled men's and ladies' rooms.

The auditorium is finished in subdued tones with illumination by flush downlights and indirect lighting coves.







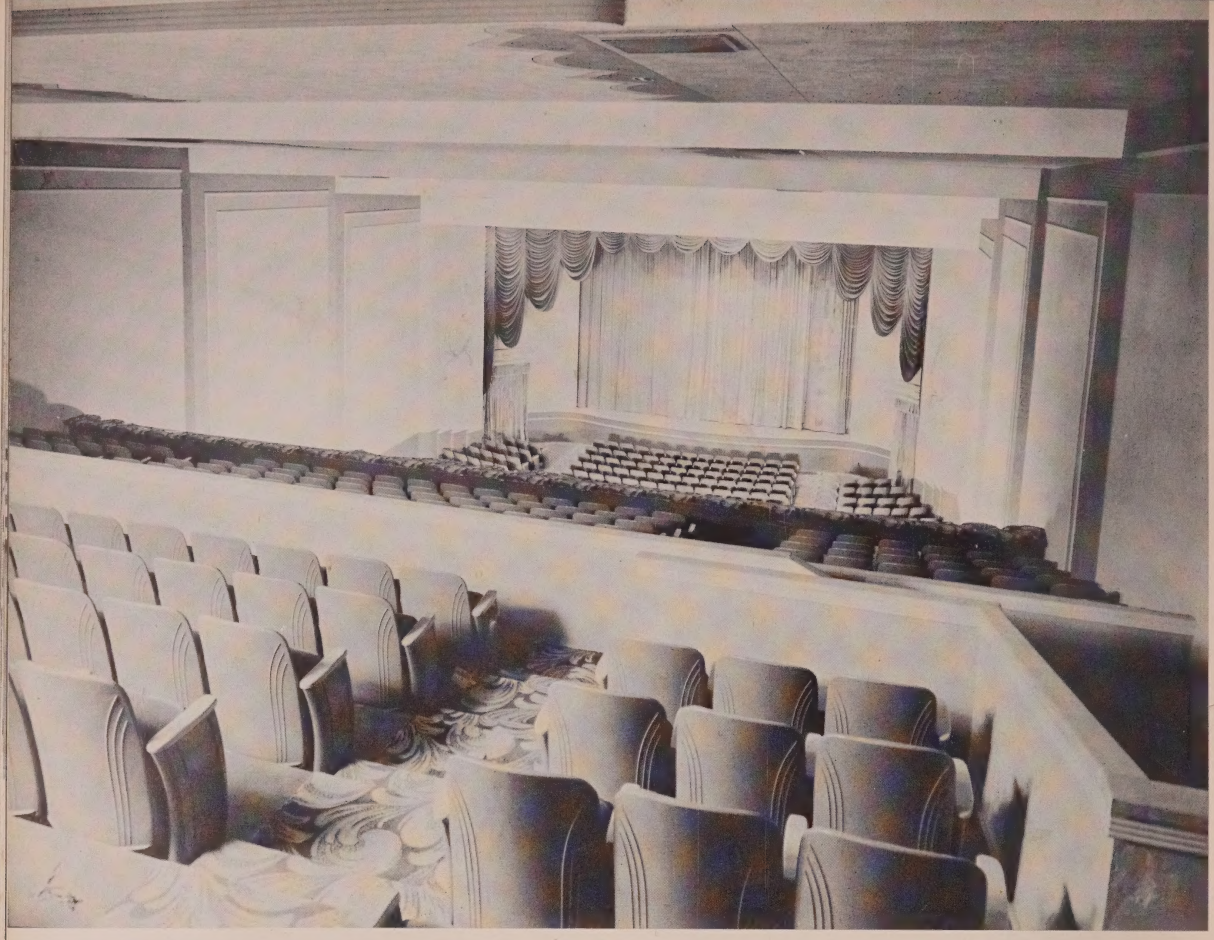


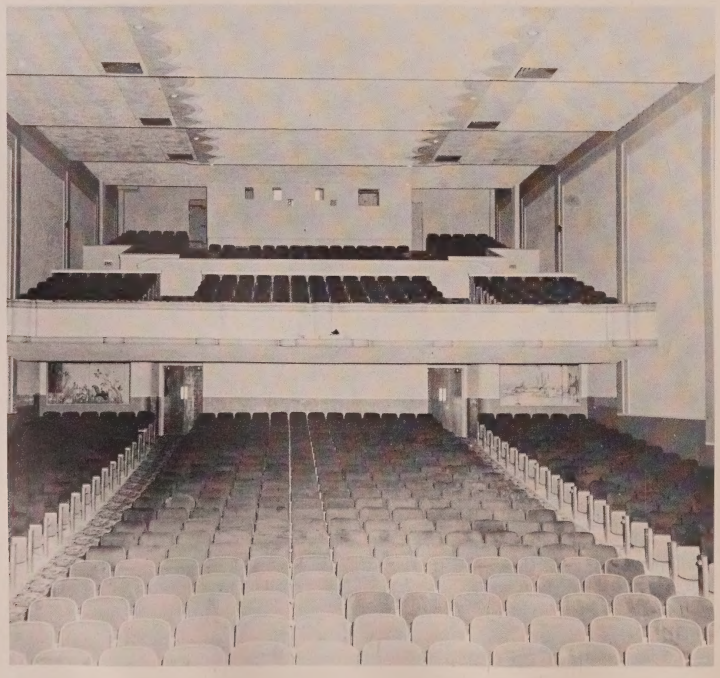
COLORFUL MURALS, depicting Mexican animal scenes, adorn the rear and side walls of the party room and cry room, respectively. BELOW: The luxurious mezzanine lounge, with its comfortable settees, rich carpeting, and floral walls provides the perfect setting for patron relaxation.

REFERENCE DATA

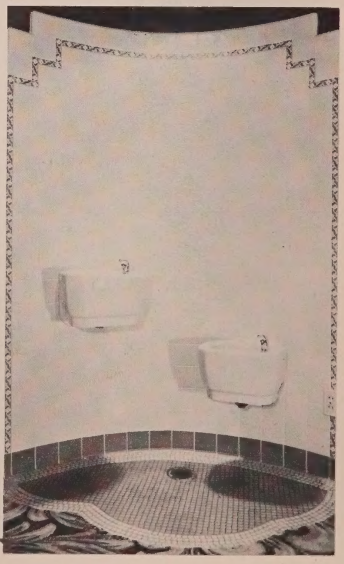
OWNER & OPERATOR: Commonwealth Amusement Corp.
ARCHITECT: Boller & Lusk.
SEATING CAPACITY: 985.
COST OF BUILDING: $150,000.
COST OF EQUIPMENT: (including air conditioning): $80,000.
SIZE OF LOT: 51'6" x 140'6".

Carpets: Alexander Smith & Sons.
Chairs: Heywood-Wakefield Co.
Curtain Controls & Track: Vallen, Inc.
Decorator: Frank Oschwald.
Display Frames: Theatre Specialties, Inc.
Draperies & Stage Curtains: Great Western Stage & Equip Co.
Generators: Century.
Lenses: Kollmorgen Optical Corp.
Projection Lamps: J. E. McAuley Mfg. Co. Peerless.
Projection Machines: International Projector Corp. Simplex X-L.
Rewinders: Goldberg Bros.
Screen: Walker-American Corp.
Sign & Marquee: United Neon Co.
Sign Letters: Theatre Specialties, Inc.
Sound: RCA.
Supply Dealer: National Theatre Supply, Missouri Theatre Supply.
Ticket Issuing Machine: General Register Corp.





AUDITORIUM WALLS are pearl grey with accents in dusty pink and grey-green with chartreuse highlights. Note plaster ornamentation on either side of proscenium. Glass fronts of cry room and party room are visible in rear view. **BELOW:** A separate lower children's drinking fountain is set in a tiled foyer recess.



REFERENCE DATA

OWNER & OPERATOR: Alex & Max Schreiber.
ARCHITECT: Ted Rogvoy, Arthur Froehlich.
SEATING CAPACITY: 1,314.
COST OF BUILDING: $212,000.
COST OF EQUIPMENT (including air conditioning): $102,000.
SIZE OF LOT: 153' x 150'.

Carpets: RCA Leedom.
Chairs: Kroehler Mfg. Co.
Curtain Controls & Track: Weaver Mfg. Co.
Decorator: Arthur Froehlich.
Display Frames: Theatre Specialties, Inc.
Draperies & Stage Curtains: Curran Productions.
Generators: Century Electric Co.
Hearing Aids: Telesonic Theatrephone, Inc.
Lenses: Kollmorgen Optical Corp. F 1.9.
Projection Lamps: RCA.
Projection Machines: RCA.
Rewinders:. Goldberg Bros.
Screen: RCA.
Sign & Marquee: Q. R. S. Neon Corp., Theatre Specialties, Inc.
Sign Letters: Theatre Specialties, Inc. 10", 17" Bevelite.
Sound: RCA.
Supply Dealer: John P. Filbert Co., Inc.
Ticket Issuing Machine: General Register Corp.
Wall Fabrics: Frankel Associates, Inc.

PARADISE •

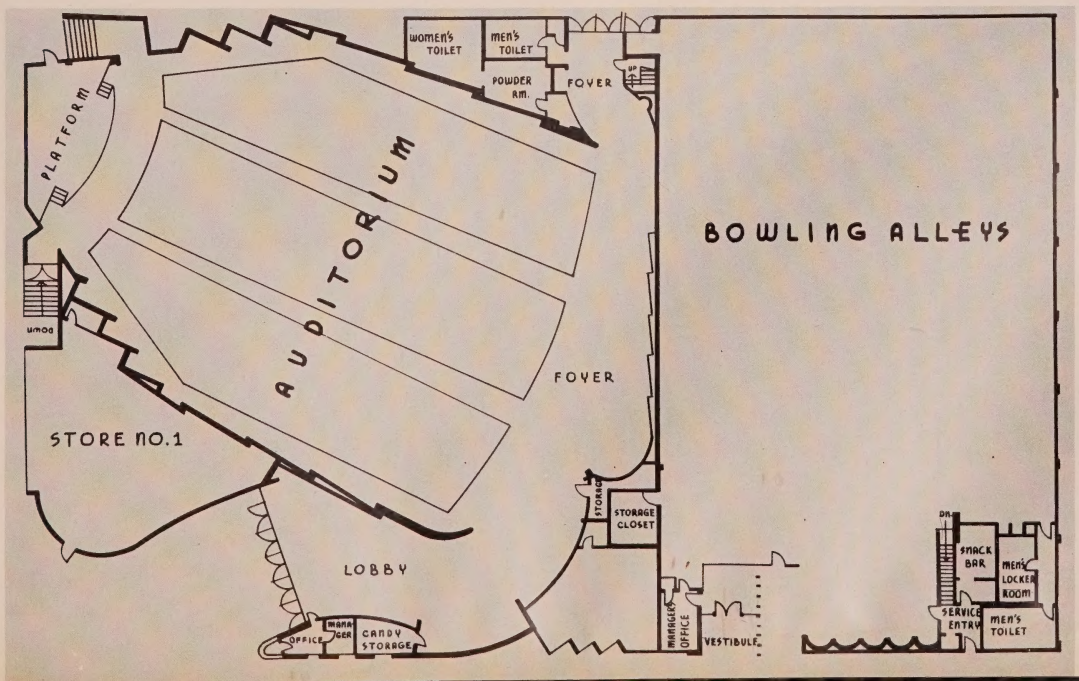
Los Angeles, Calif.

Part of a development which includes stores, a bowling alley, and cocktail lounge, the Paradise was opened August 23, 1950, as a second-run house.

The front is of fieldstone, brick, and glass in the modern California style. Live plants under the canopy give this area an outdoor patio effect.

After passing through a mirrored and planted lobby with a curved refreshment stand and manager's office at one side, the patron enters a magnificent foyer with pastel walls trimmed in redwood, and an aquarmarine carpeting studded with stars.

Special features of the auditorium include a rear cry room and hearing aids.



INSIDE THE SPACIOUS AUDITORIUM the garden-like atmosphere of the house continues with plantings installed in fieldstone offsets at the extremities of the blue limpit side walls. The ceiling is blue also. **BELOW:** This shot of the lobby shows how the outdoors has been brought indoors to excellent effect through a plant garden set off by banked fieldstone. Sponge rubber padding 5/8" thick has been laid under carpeting.

A REARWARD VIEW OF THE INTERIOR shows the wide aisles, "push-back" seats, and the glass front of the cry room at the back. Illumination is provided by cove lighting and downlights set in the sky-blue ceiling. BELOW: A special section of the foyer, entitled the "Wall of Fame", contains a pictorial history of Academy Award winners in all fields since 1927. The rich carpeting is aquamarine with scattered yellow and beige stars.

REFERENCE DATA

OWNER & OPERATOR: Esterl Amusement Co.
ARCHITECT: Perry Crosier & Son.
SEATING CAPACITY: 584.
COST OF BUILDING: $50,000.
COST OF EQUIPMENT (including air conditioning): $35,000.
SIZE OF LOT: 50′ x 120′.

Carpets: Mohawk Carpet Mills, Inc.
Chairs: Heywood-Wakefield Co.
Curtain Controls & Track: Automatic Devices Co.
Decorator: Dahlstrom & Wienberger.
Display Frames: Poblocki & Sons.
Generators: Century Electric Co.
Lenses: Kollmorgen Optical Corp.
Projection Lamps: RCA.
Projection Machines: RCA.
Rewinders: GoldE Mfg. Co.
Screen: RCA.
Sign & Marquee: Poblocki & Sons.
Sign Letters: Wagner Sign Service, Inc. 10″ Red plastic.
Sound: RCA.
Supply Dealer: Vic Manhardt Co., Inc.
Ticket Issuing Machine: General Register Corp.
Vending Machines: C. Cretors & Co.

PARK •

Park Falls, Wis.

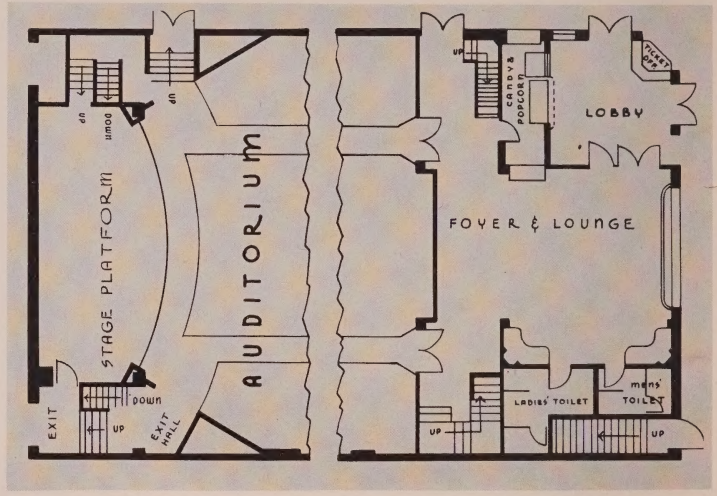
Opened June 15, 1950, the Park is primarily patronized by vacationists and local residents. Store and office space is provided above the theatre.

The front has a cream-colored artstone facing with a dark brown base. Canopy is stainless steel with amber chaser lights and twinkle lights in upright sign.

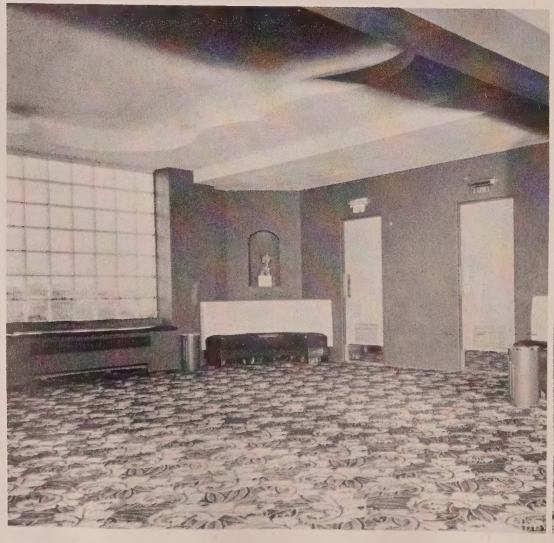
Walls of the lobby are done in dark green and light tans, while the ceiling is cream. A candy counter is built to serve outsiders as well as patrons.

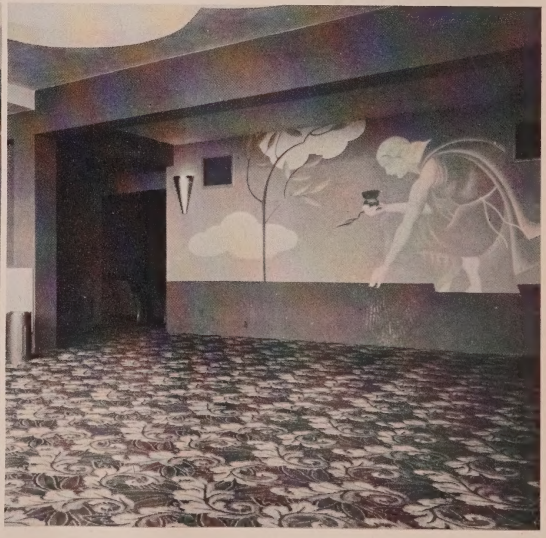
Combinations of dark blue and brown are predominant in the foyer with a ceiling cove in orchid. All woodwork is blonde prima vera. A comfortable lounge and rest rooms are at one end of the foyer.

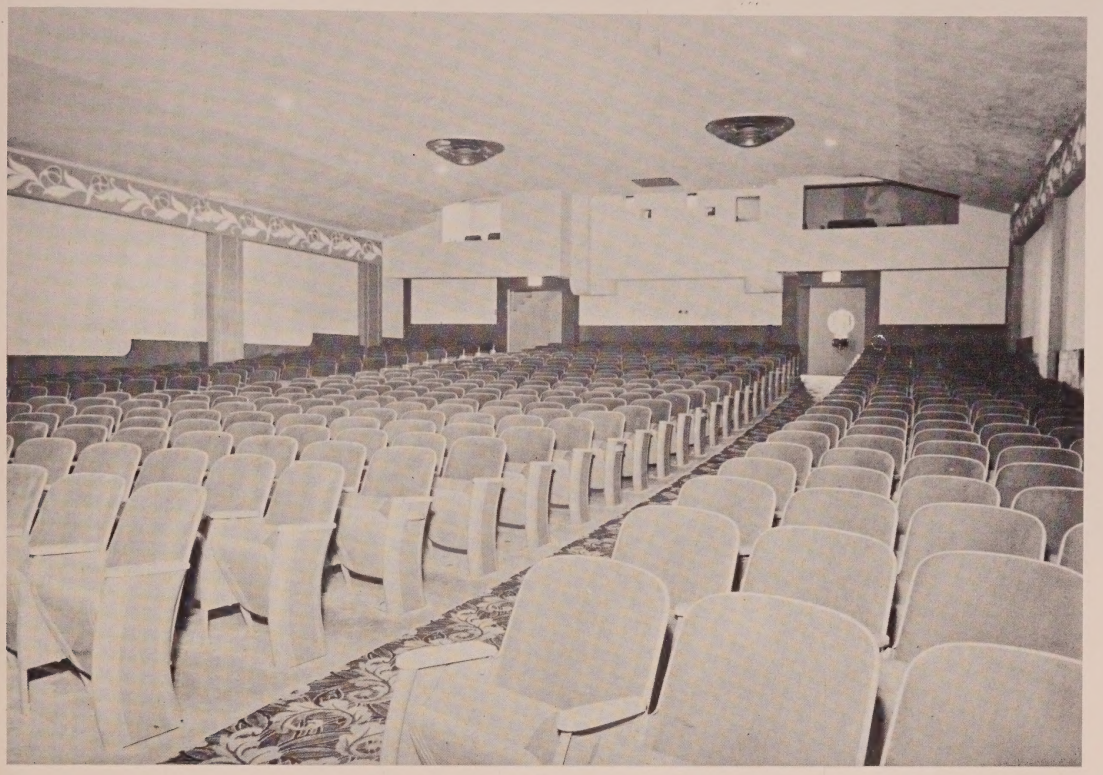
The auditorium is finished in blue-green and shades of brown. Figured ornamentation adorns side wall panels, and special cry and party rooms are at upper rear on a level with the booth.



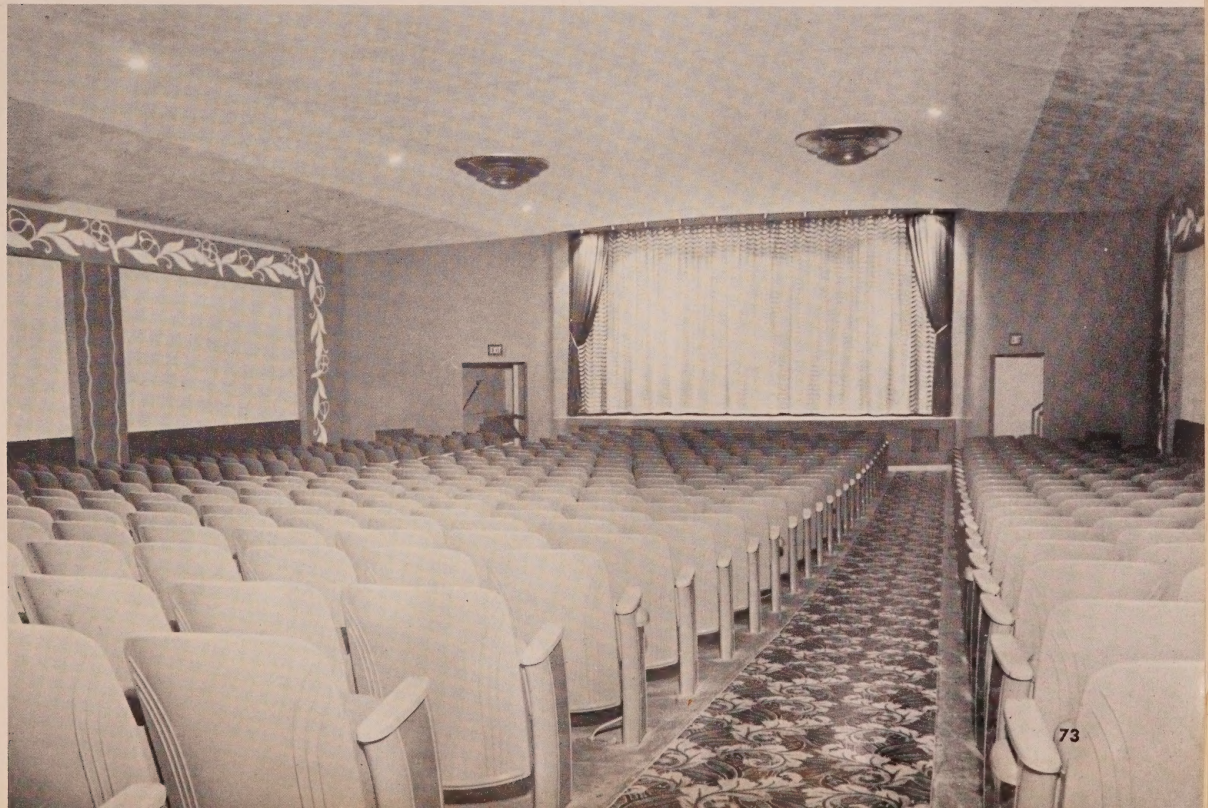
THE BOXOFFICE is arranged so that tickets can be sold inside or out, just as the refreshment stand is set up to sell its wares to passersby or patrons in the theatre. BELOW: Mural wall lounge adjoining the rest rooms represents the planting of trees. Carpeting is a red-gold floral pattern.







THE DECOR OF THE AUDITORIUM is tastefully subdued with rust-colored drapes and chairs complementing the dark blue-green and brown walls.



RAPIDS •

Eaton Rapids, Mich.

The Rapids, which opened February 28, 1950, is a modern two-story building of brick and cinder block construction. The front as well as the marquee is finished in colored porcelain enamel.

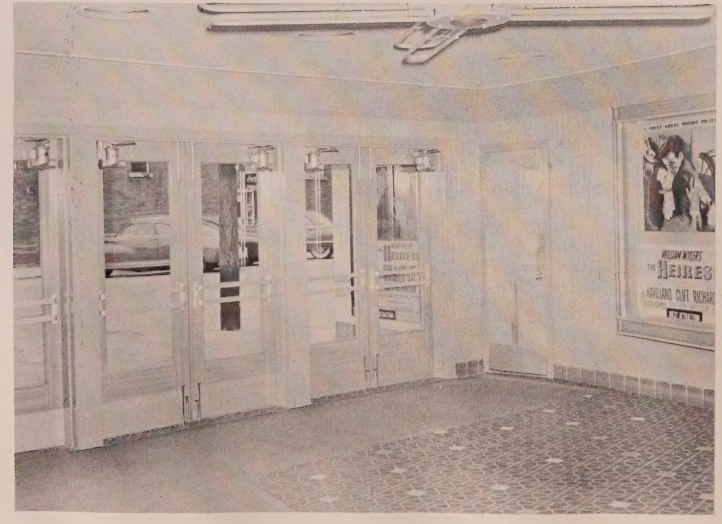
Walls of the modernistic lobby are covered with plywood and decorated in green shades. These blend with the multi-colored tile floor and natural finish doors to the foyer. Carpeting is rose-red with an attractive leaf motif.

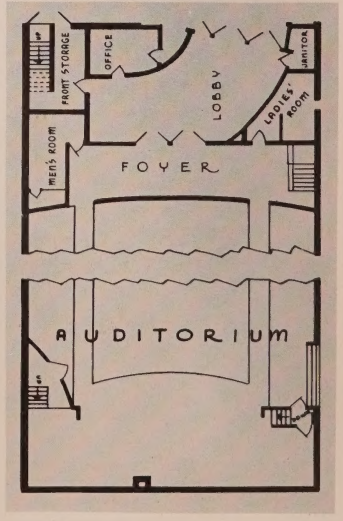
At either side of the lobby are entrances to the all-tile rest rooms. A staircase leads up to an unseated auditorium balcony and a large cry room.

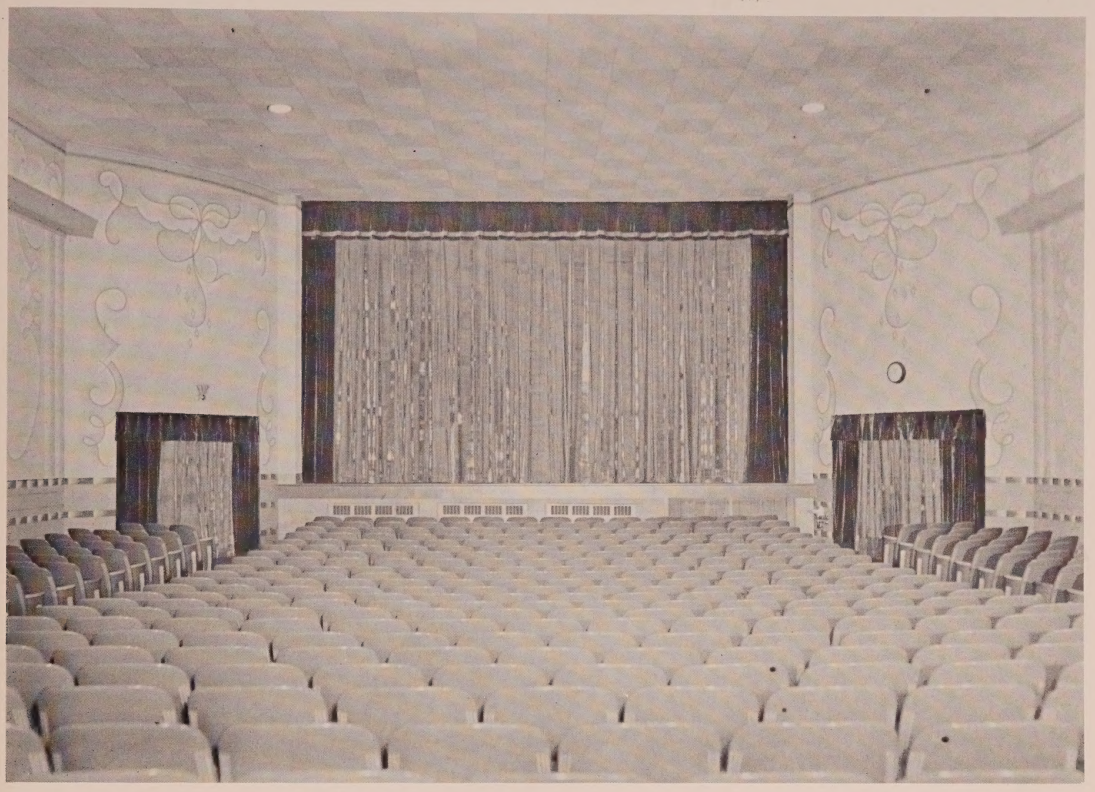
REFERENCE DATA

OWNER & OPERATOR: Cash Beechler.
ARCHITECT: Talmage C. Hughes with Albert S. Johnson, Theatre Consultant.
GENERAL CONTRACTOR: Johnson Construction Co.
SEATING CAPACITY: 612.
COST OF BUILDING (including air conditioning): $69,000.
COST OF EQUIPMENT: $21,500.
SIZE OF LOT: 50' x 132'.

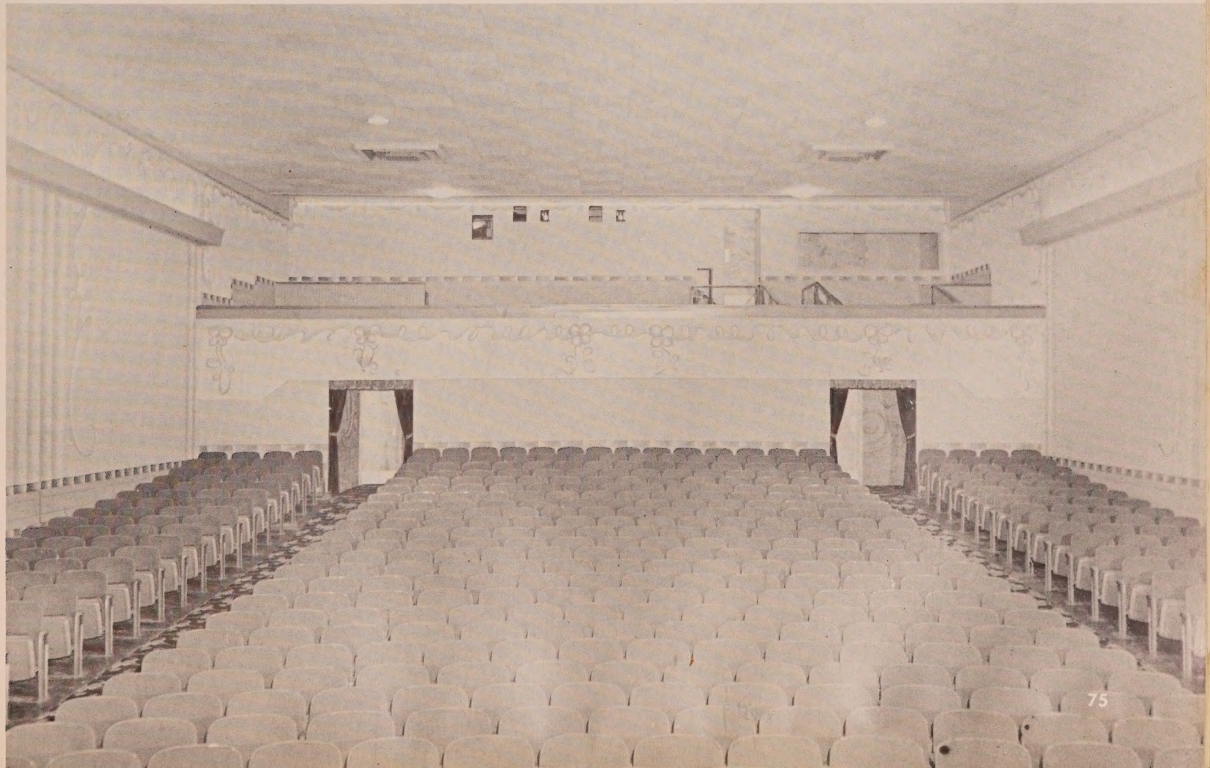
Carpets: Alexander Smith & Sons.
Chairs: American Seating Co.
Curtain Controls & Track: Vallen, Inc.
Decorator: T. Jagmin, Inc.
Display Frames: Theatre Specialties, Inc.
Draperies & Stage Curtains: Mork-Green, Inc.
Generators: Hertner Electric Co.
Lenses: Kollmorgen Optical Corp.
Projection Lamps: Simplex High.
Projection Machines: International Projector Corp. Simplex X-L.
Rewinders: Goldberg Bros.
Screen: Walker-American P.M.
Sign & Marquee: Mulholland Sign Co.
Sign Letters: Wagner Sign Service, Inc.
Sound: International Projector Corp.
Supply Dealer: National Theatre Supply.
Ticket Issuing Machine: General Register Corp.
Wall Fabrics: Frankel Associates, Inc.







THE FREE-HAND DRAWINGS which decorate the auditorium are effectively played up by cove lighting and downlights in the ceiling. Two shades of green velour, cascade and leaf green, are used in the stage setting and drapes with rose-red backdrops. Note cry room window above balcony.



HILAND •

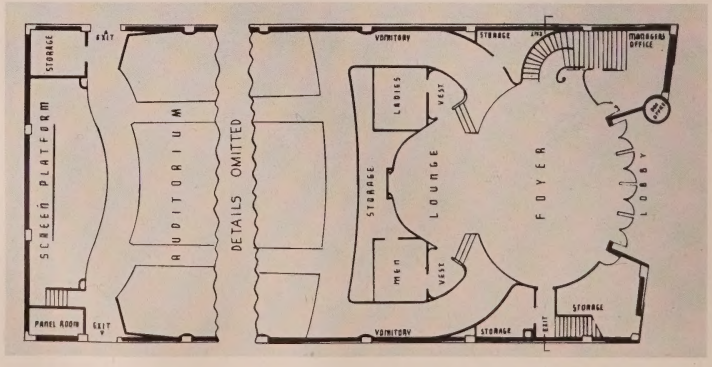
Albuquerque, N. M.

Part of a neighborhood shopping center with four adjoining stores, the Hiland was opened April 20, 1950. A paved parking lot in the rear holds 350 cars.

The front is light brick trimmed in Tennessee rock and light green ceramic tile. The vertical sign is green porcelain.

Walls and ceilings in the lobby and foyer are finished in various shades of coral with cove lighting. A terrazzo floor in the latter has green inlaid designs.

Beyond the foyer is a spacious lounge off which are tiled rest rooms. A staircase leads to the balcony of the stadium-type auditorium and a cry room.

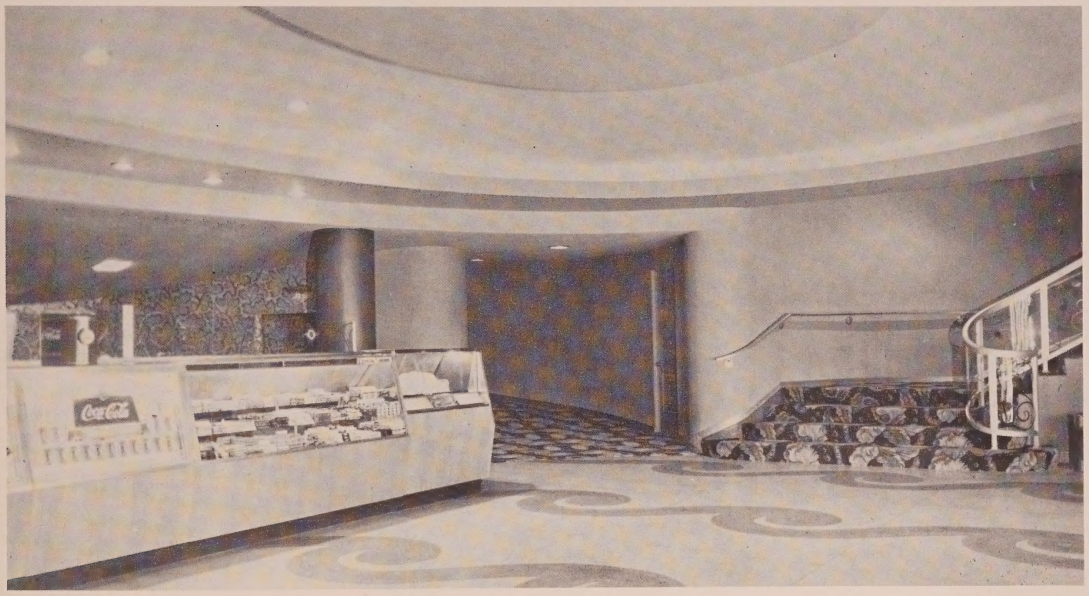


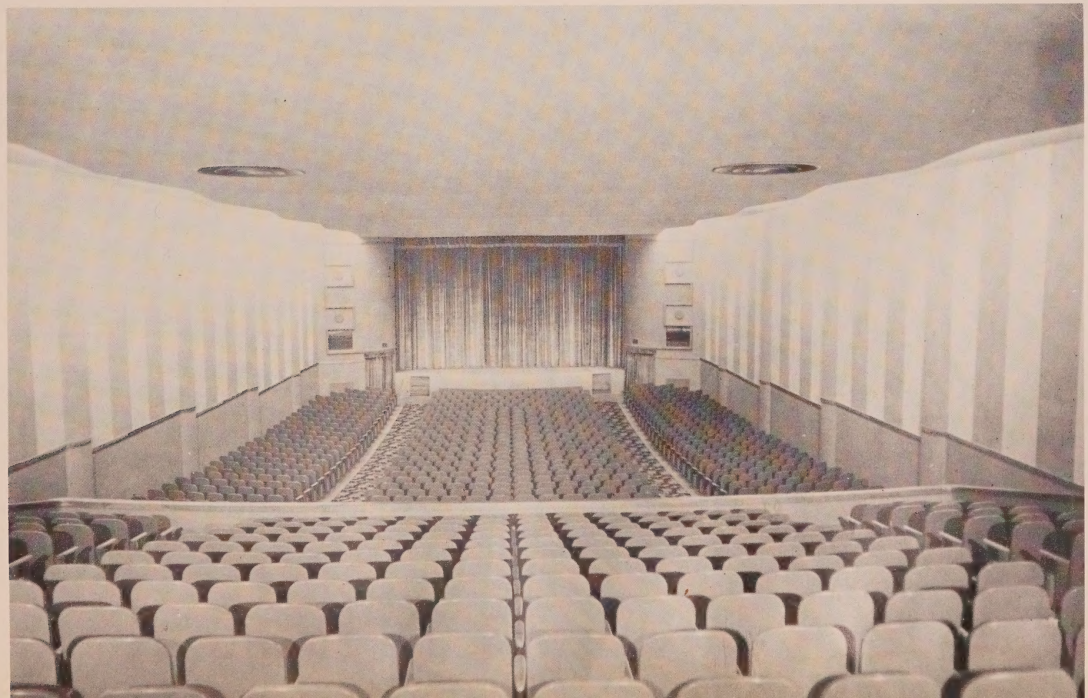
REFERENCE DATA

OWNER: Albuquerque Exhibitors, Inc.
OPERATOR: Interstate Circuit, Inc.
ARCHITECT: Wm. Burke.
SEATING CAPACITY: 1,188.
SIZE OF LOT: 250′ x 300′.

Carpets: A. & M. Karagheusian, Inc.
Chairs: Kroehler Mfg. Co.
Decorator: Eugene Gilbo.
Draperies & Stage Curtains: Oklahoma Scenic Co.
Lenses: Rosskote.
Projection Lamps: Strong Electric Corp.
Projection Machines: Century Projector Corp.
Screen: Walker-American Corp.
Sign Letters: Adler Silhouette Letter Co. plastic.
Sound: RCA.
Supply Dealer: Southwestern Theatre Equip. Co.
Ticket Issuing Machine: General Register Corp.

LEAF WALLPAPER and planting add floral charm to lounge. BELOW: 1. A section of foyer candy bar. 2. View of green and coral auditorium.





NEW MAYFAIR •

Philadelphia, Pa.

Located in a busy uptown shopping district, this house was opened June 7, 1950. The patronage consists mainly of middle-class working people.

The baked enamel and glass front opens directly into a small vestibule, or outer lobby, with walls of natural wood and corrugated transite and a decorative asphalt tile floor.

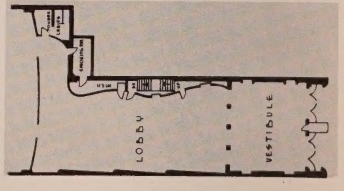
Walls of the main lobby are done in a free-hand pattern of brown and beige, and lighting is indirect. A long candy bar is at one side opposite tiled rest rooms.

The turquoise, grey, and rose auditorium has patterned wallpaper, ornamental plaster ceiling, and murals at stage sides.

REFERENCE DATA

OWNER: A. Altman.
OPERATOR: M. Wax.
ARCHITECT: Philip Mastrin.
SEATING CAPACITY: 804.
COST OF BUILDING: $80,000.
COST OF EQUIPMENT: $25,000.

Carpets: Mohawk Carpet Mills, Inc.
Chairs: International Seat Co.
Curtain Controls & Track: Vallen, Inc.
Decorator: Paramount Decorating Co.
Draperies & Stage Curtains: Paramount Decorating Co.
Generators: Century Electric Co.
Lenses: Kollmorgen Optical Corp.
Lighting Fixtures: Voigt Co.
Projection Lamps: RCA.
Projection Machines: RCA.
Screen: RCA.
Sign & Marquee: Apex Sign Co.
Sign Letters: Adler Silhouette Letter Co.
Sound: RCA.
Supply Dealer: Blumberg Bros.
Ticket Issuing Machine: General Register Corp.
Ticket Chopper: GoldE Mfg. Co.
Wall Fabrics: Paramount Decorating Co., Frankel Associates, Inc.



APPOINTMENTS of this modern theatre are luxurious in every respect from the inviting front to the fashionable lobby and decorative auditorium.

ALEX •

Alexandria, Ind.

A colonial-type structure of steel and concrete, the Alex opened July 28, 1950, as a first-class Hoosier showcase.

The front initiates the colonial theme with its white shutters around display frames, overhanging balcony, shuttered windows above, and red face brick.

A square decorative lobby done in cream contains a candy stand and the manager's office. Twin passages lead from the foyer beyond to the tiled rest rooms.

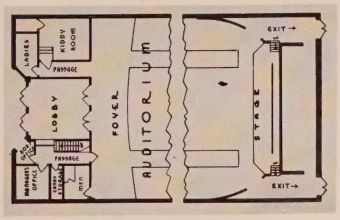
The stylish auditorium contains a cry room at the rear with animal murals.

TWO UNOBTRUSIVE PILASTERS on sidewalk floodlight the front at night, while fixtures on walls of auditorium, which complement the peanut, aqua, and dubonnet drapes, aid downlight illumination.

REFERENCE DATA

OWNER & OPERATOR: Mr. & Mrs. R. S. Weilert.
ARCHITECT: Erwin G. Fredrick.
GENERAL CONTRACTOR: Leo I. Underwood.
SEATING CAPACITY: 550.
COST OF BUILDING: Approx. $70,000.
COST OF EQUIPMENT (including air conditioning): Approx. $38,000.
SIZE OF LOT: 50′ x 128′.

Carpets: Alexander Smith & Sons.
Chairs: Heywood-Wakefield Co.
Curtain Controls & Track: Vallen, Inc.
Decorator: Parker & Sons.
Display Frames: Theatre Specialties, Inc.
Draperies & Stage Curtains: Premier Studios, Inc.
Generators: Hertner Electric Co.
Lenses: Kollmorgen Optical Corp.
Projection Lamps: J. E. McAuley Mfg. Co. Peerless Magnarc.
Projection Machines: International Projector Corp. Simplex X-L.
Rewinders: GoldE Mfg. Co.
Screen: Walker-American Corp. P. M.
Sound: International Projector Corp.
Supply Dealer: National Theatre Supply.
Ticket Issuing Machine: General Register Corp.
Vending Machines: Manley, Inc.
Wall Fabrics: Maharam Fabric Corp.



MARS •

Mars, Pa.

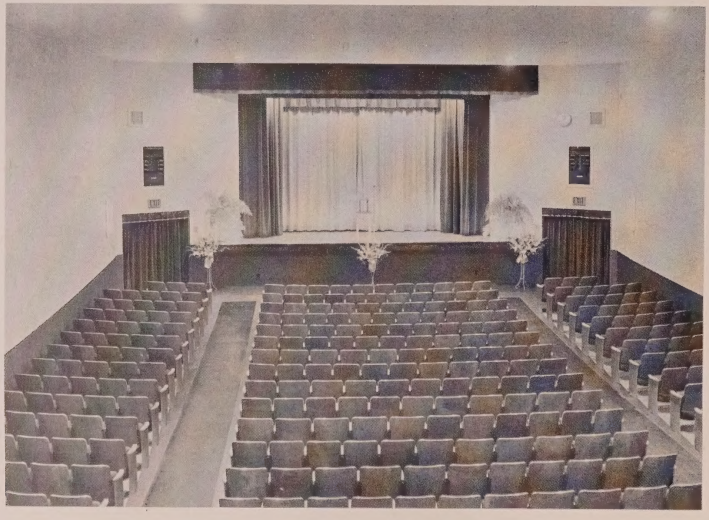
Structurally unique because of a specially built, tubular-steel truss "wet" roof, the Mars was opened January 2, 1950. Patrons are farmers and town workers.

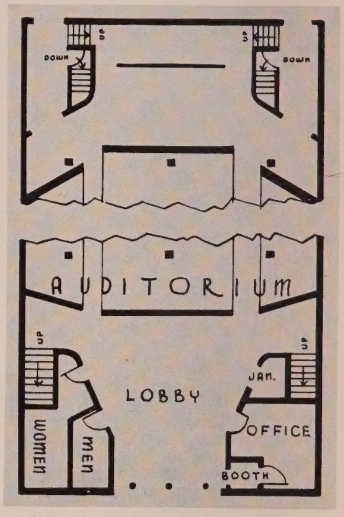
Glass doors lead from the solid brick front into a lobby with cream walls and a white ceiling. Toilets have same scheme.

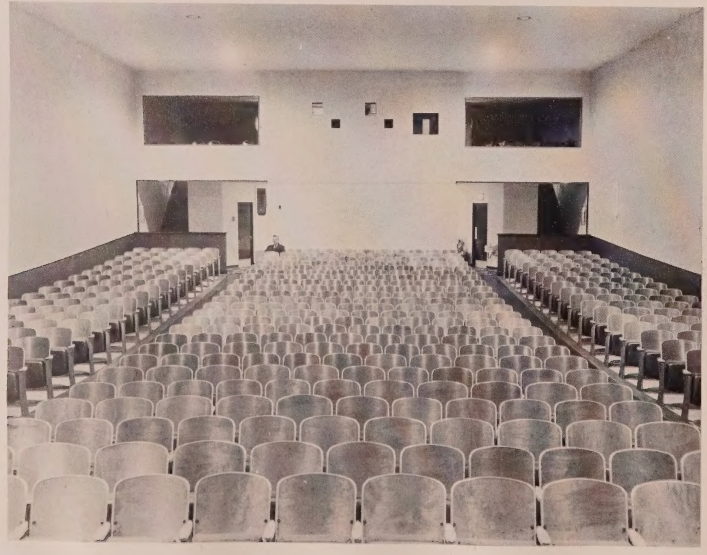
The floor of the outer lobby is maroon block tile, while that of the inner section is carpeted in the same shade.

At the end of the lobby stands a well-equipped candy counter. Staircases on either side lead up to the booth, a cry room, television lounge, and storeroom.

The plain auditorium has cream-colored walls, white ceiling, and cork aisles.







REFERENCE DATA

OWNER: Adelman, Stewart & Shoemaker.
OPERATOR: Ralph Adelman.
ARCHITECT: Warnick & Treffery.
SEATING CAPACITY: 500.
COST OF BUILDING: Approx. $40,000.
COST OF EQUIPMENT: $40,000.
SIZE OF LOT: 50′ x 120′.

Carpets: Alexander Smith & Sons.
Chairs: American Seating Co.
Curtain Controls & Track: Vallen, Inc.
Display Frames: Theatre Specialties, Inc.
Film Cabinets: GoldE Mfg. Co.
Lenses: Bausch & Lomb Optical Co.
Projection Lamps: RCA.
Projection Machines: RCA.
Rectifiers: Strong Electric Corp.
Rewinders: GoldE Mfg. Co.
Screen: RCA.
Sound: RCA.
Supply Dealer: National Theatre Supply, Alexander Theatre Supply, Inc.
Ticket Issuing Machine: General Register Corp.
Ticket Chopper: GoldE Mfg. Co.

REULE •

Medina, N. D.

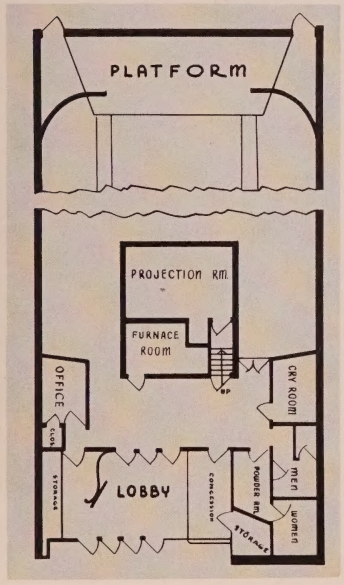
Opened September 13, 1950, the Reule is a choice small theatre serving a farm and working-class populace of 1300.

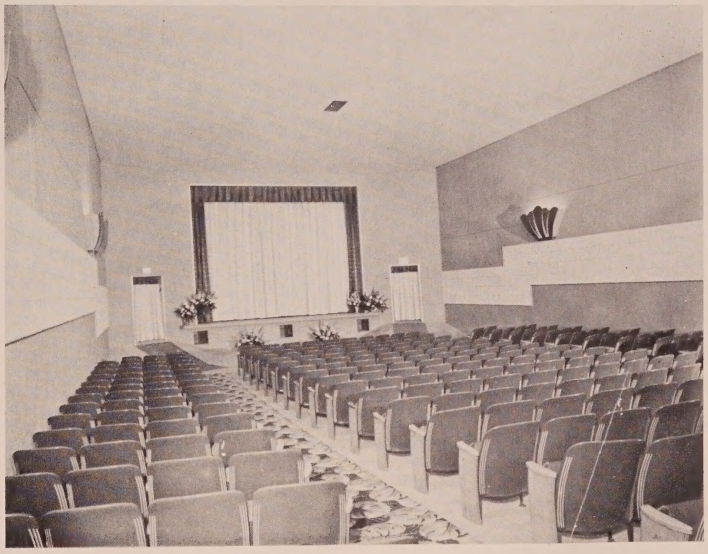
Front of building, which has an apartment above, is red brick with recessed spots under a stainless steel canopy.

The color scheme of the lobby and foyer is centered around various shades running from pink to red with a floral design on the walls. Floors are asphalt tile. At one side of lobby is a candy bar.

Both toilet rooms are finished in soft green and blue, but the ladies' lounge is done in pink and blue tones. A cry room is nearby across from the office.

Auditorium is brown, white, and pink with lighting from ornamental fixtures.





REFERENCE DATA

OWNER & OPERATOR: Norman Reule.
ARCHITECT: Sebco.
SEATING CAPACITY: 333.
COST OF BUILDING: Approx. $40,000.
COST OF EQUIPMENT: (including air conditioning): Approx. $15,000.
SIZE OF LOT: 50′ x 140′.

Carpets: Alexander Smith & Sons.
Chairs: American Seating Co.
Curtain Controls & Track: Automatic Devices Co.
Lenses: Bausch & Lomb Optical Co.
Projection Lamps: J. E. McAuley Mfg.
Projection Machines: International Projector Corp. Simplex X-L.
Screen: Walker-American Corp.
Sound: International Projector Corp.
Supply Dealer: National Theatre Supply.
Wall Fabrics: Frankel Associates, Inc.

SPARTA •

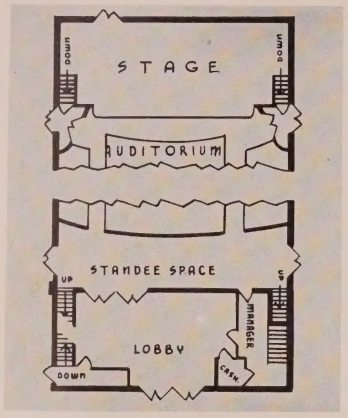
Sparta, N. J.

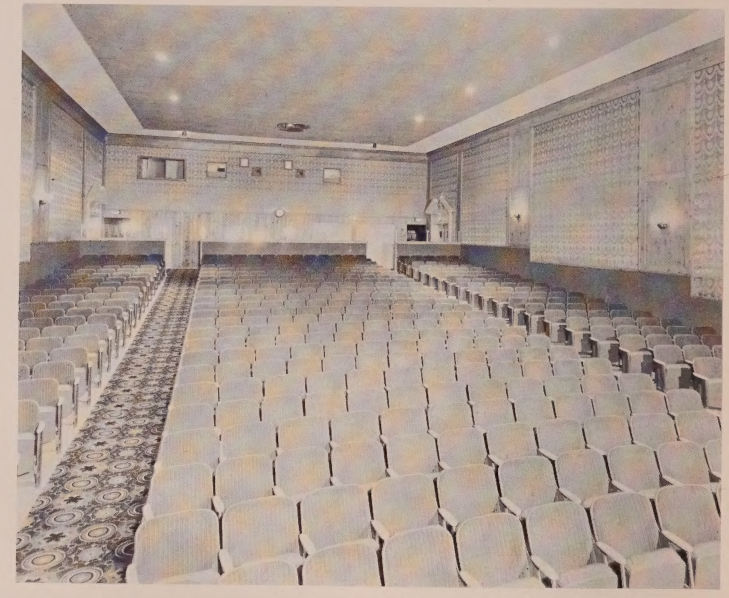
The first building erected on the site of a future large shopping center, the Sparta was opened August 23, 1950. A parking field in the rear holds 350 cars.

White columns and red brick form a colonial front for the house. Illumination is by floodlights from a street pole.

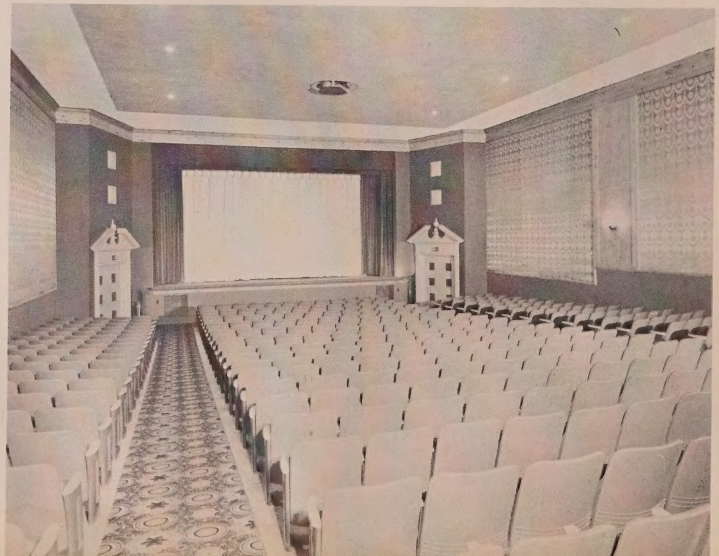
The lobby and foyer areas are paneled in knotty pine throughout, and the floor of the former is covered by red rubber matting with a colonial figure inscribed. Lighting fixtures, likewise colonial, are suspended from the ceiling.

Rest rooms on floor are tile and plaster. A cry room is also on this level, while a candy bar is in lobby.





KNOTTY PINE WOOD PANELING with rose damask has been used on walls of the auditorium. The colonial theme of the house has been carried on in the exit doors, carpeting and lighting fixtures on walls.



REFERENCE DATA

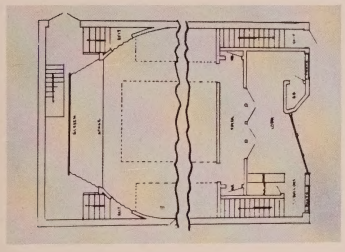
OWNER: St. Cloud Bldg. Corp.
OPERATOR: St. Cloud Amusement Corp.
ARCHITECT: Joseph J. Furman.
SEATING CAPACITY: 498.
COST OF BUILDING: $80,000.
COST OF EQUIPMENT (including air conditioning): $50,000.
SIZE OF LOT: 60′ x 150′ excluding parking field.

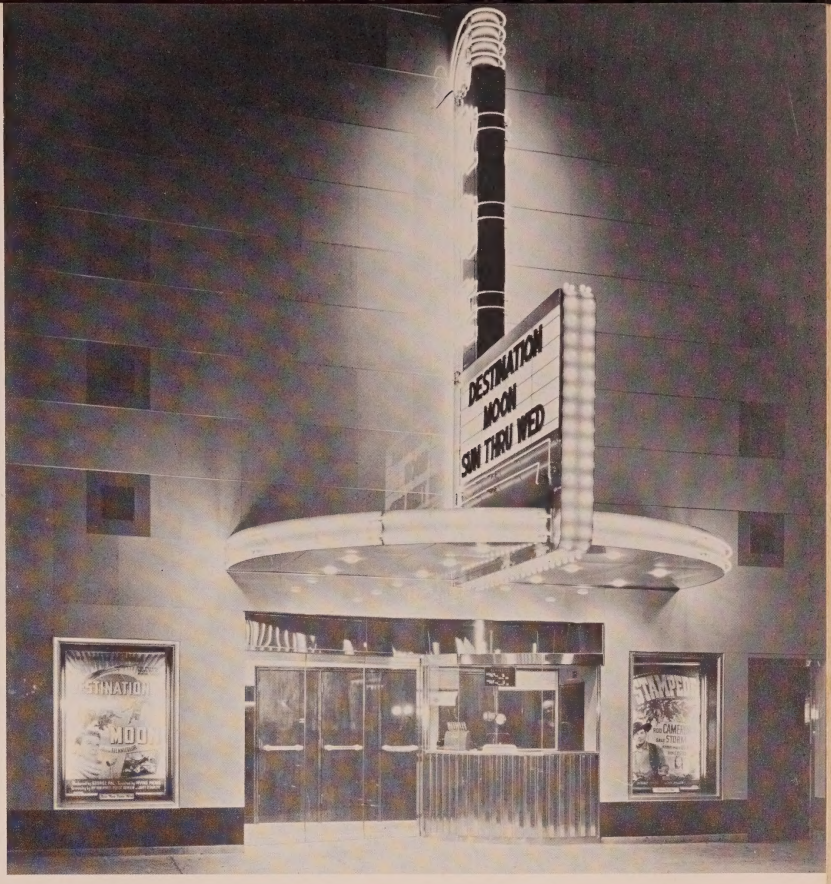
Carpets: A. & M. Karagheusian, Inc.
Chairs: Ideal Seating Co.
Curtain Controls & Track: Automatic Devices Co.
Decorator: Alan Gebhart.
Display Frames: Theatre Specialties, Inc.
Draperies & Stage Curtains: Joe Hornstein, Inc.
Generators: Hertner Electric Co.
Lenses: Bausch & Lomb Optical Co.
Projection Lamps: RCA.
Projection Machines: RCA.
Rewinders: Goldberg Bros.
Screen: RCA.
Sign Letters: Wagner Sign Service, Inc.
Sound: RCA.
Supply Dealer: Joe Hornstein, Inc.
Ticket Issuing Machine: General Register Corp.
Wall Fabrics: Maharam Fabric Corp.

REFERENCE DATA

OWNER & OPERATOR: Clark & Russell Armentrout.
DESIGNER: Ted Dell.
SEATING CAPACITY: 351.
SIZE OF LOT: 80′ x 35′.

Carpets: RCA.
Chairs: International Seat Co.
Lenses: Bausch & Lomb Optical Co.
Projection Lamps: Strong Electric Corp.
Projection Machines: International Projector Corp. Simplex X-L.
Rectifiers: Strong Electric Corp.
Screen: RCA.
Sign & Marquee: C. Bendson Co.
Sign Letters: Adler Silhouette Letter Co.
Sound: RCA.
Supply Dealer: St. Louis Theatre Supply Co.
Ticket Issuing Machine: General Register Corp.
Wall Fabrics: Frankel Associates, Inc.





ZOE •

Pittsfield, Ill.

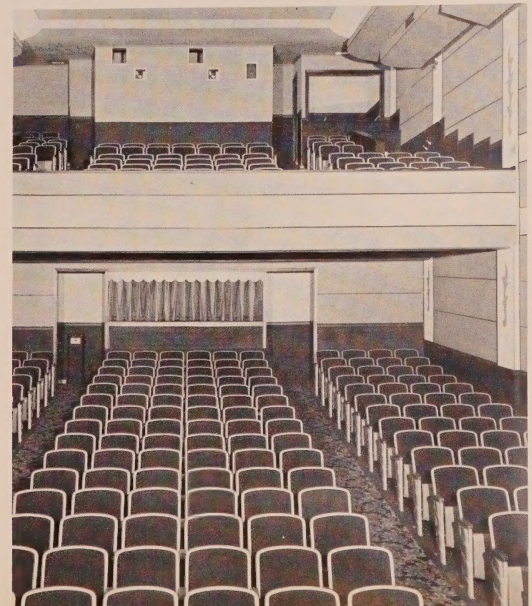
A first-run house located in the main business section of the city, the Zoe was opened September 17, 1950.

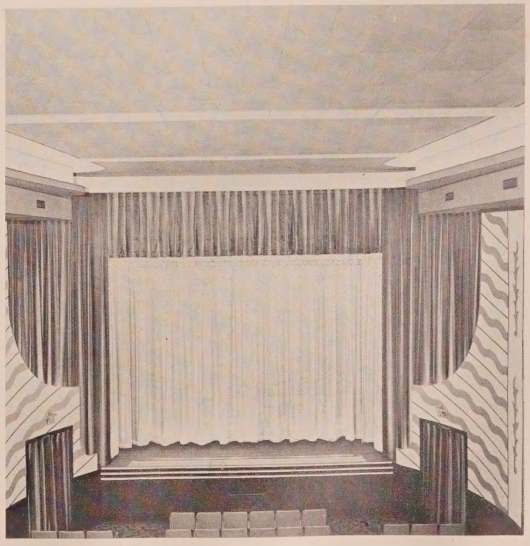
The front is covered with carrara structural glass in ivory, red, and beige. A stainless steel boxoffice is located under a marquee of the same metal with porcelain sign work above.

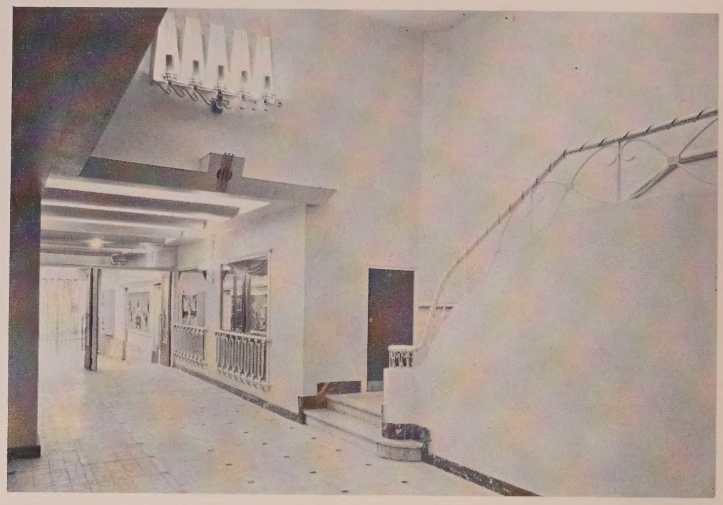
Green Weldtex has been used on the ceiling and walls of the lobby and foyer, while the wainscoting is striped mahogany. A small candy stand stands on a green tiled floor at one side of the lobby. Rest rooms are done in green also.

The auditorium is finished in Nu-Wood with green and red molding trim. Cove lighting in gold and blue provides illumination. A cry room in the balcony has a visual glass front.

GREEN AND RED MOLDING TRIM on the auditorium walls matches colors of the 351 chairs and blends with the gold, green, and red aisle carpeting.







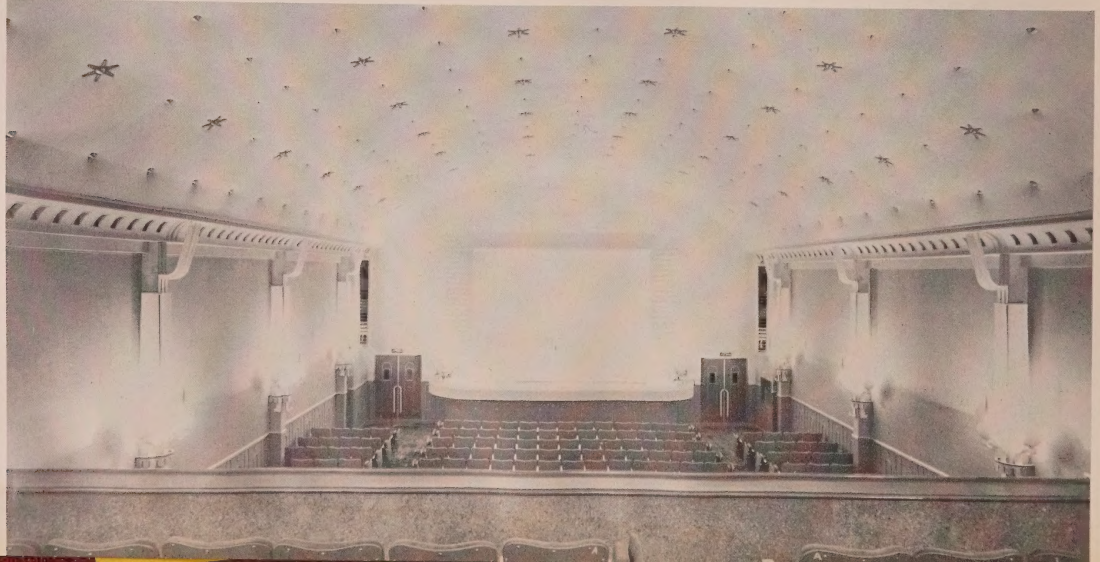
REGENT •

Algiers, Algeria

The 690-seat Regent is situated right in the heart of the thriving Algiers business section. Curved neon tubing at the entrance, which directs the eye down a narrow lobby, makes it a landmark at night.

Esthetic appeal is also to be noted inside the house from the multi-colored tile floor and ornamental ironwork in the lobby and foyer to the star-studded ceiling of the auditorium.

All appointments throughout other sections of the house are equally attractive.



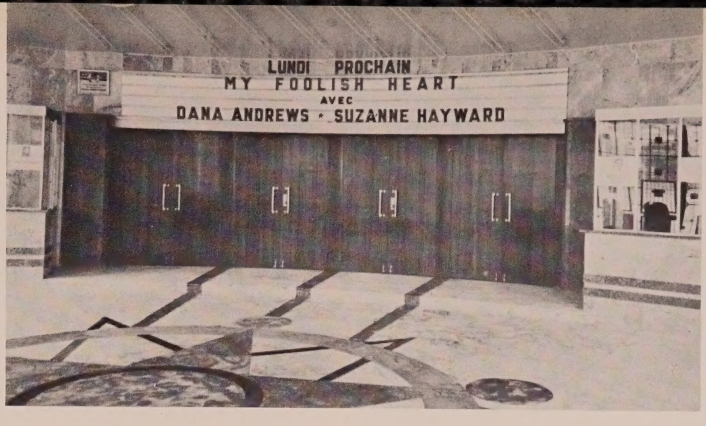
CAPITOLE •

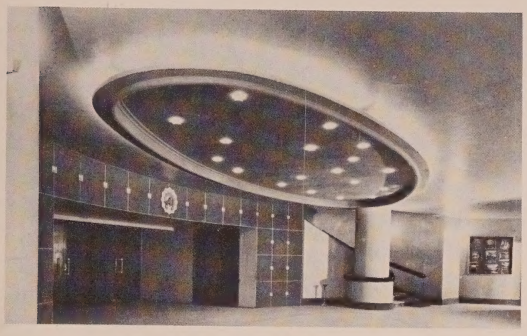
Beyrouth, Lebanon

The Capitole compares favorably in equipment, comfort, and convenience with the finest theatres in the world.

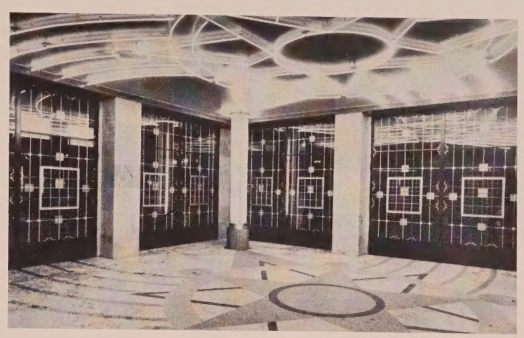
The sheer marble walls, the beautiful terrazzo floors, the elaborate ironwork, and the decorative lighting found in the house are in keeping with a modern style of design popular in the East.

Western Electric sound and projection equipment, 1,080 Kroehler "push-back" chairs, and Carrier air conditioning are used.

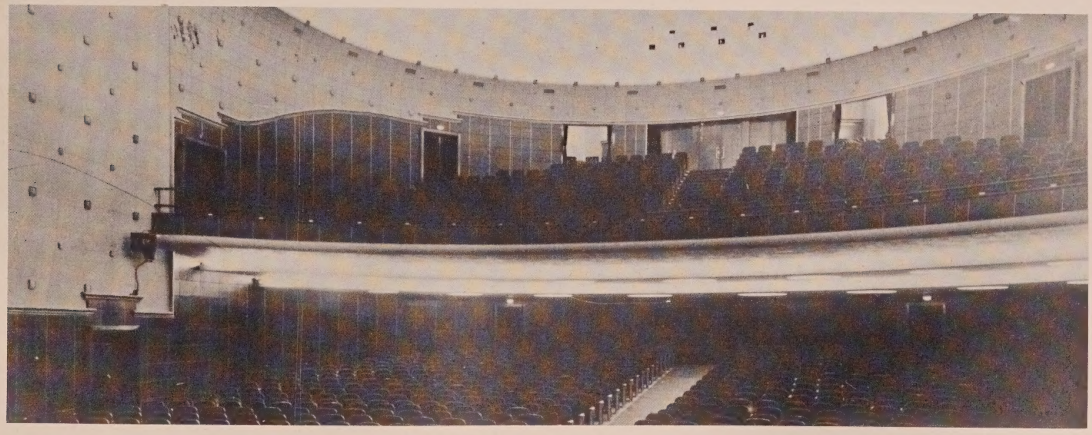


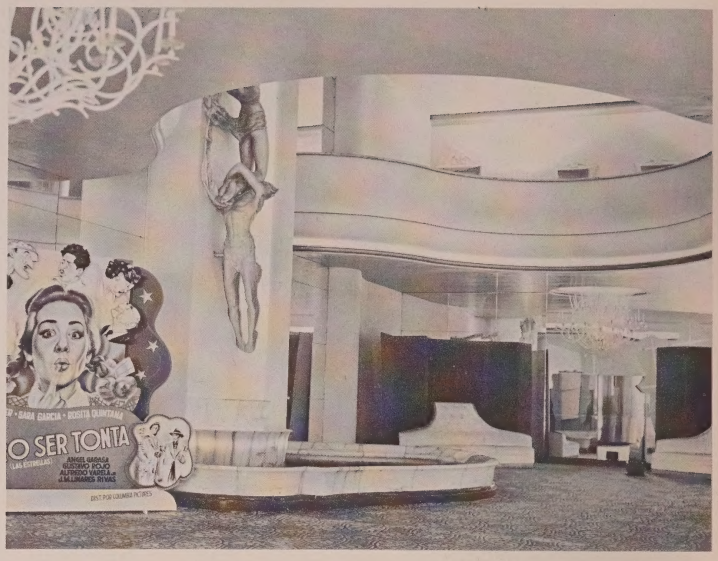


MAGNIFICENT GEOMETRIC DESIGNS are seen in the terrazzo floors and ceiling lighting of the entrance, which has an Adler sign, and the lobby.



Illumination in the foyer is provided from coves and downlights. BELOW: Decorations in the auditorium are quite plain in tasteful contrast.





CHAPULTEPEC •

Mexico, D. F.

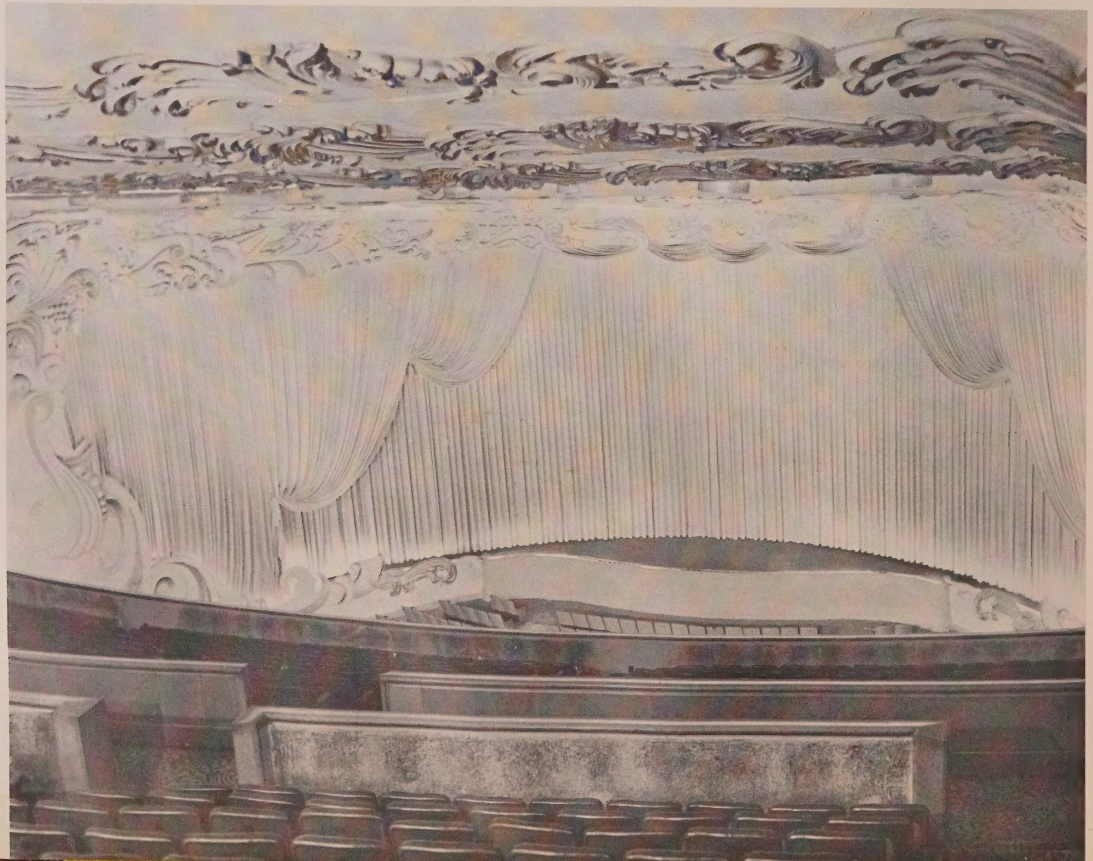
Designed by California's Architect S. Charles Lee, the 2,390-seat Chapultepec is part of a large office building.

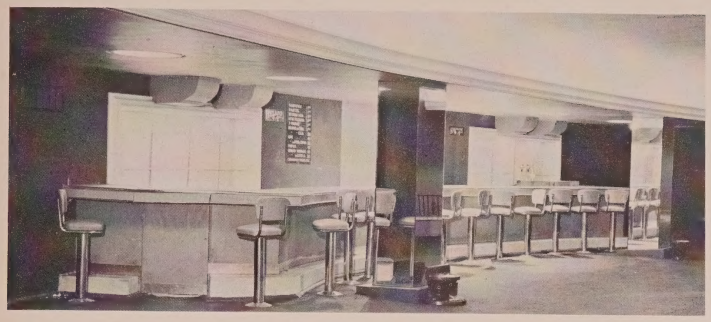
Above the massive marquee soars a towering vertical sign with the name of the theatre spelled out in enormous block letters that are illuminated at night.

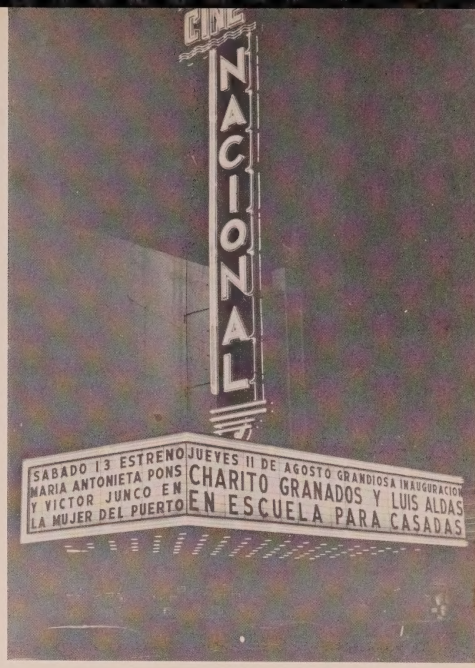
Although the house is magnificently appointed throughout, the foyer is particularly notable for the heroic sculptured figures on one wall, the inviting settees scattered about, and the glass chandeliers suspended from the ceiling.

The auditorium is also a focal point of beauty with its elaborate plaster ornamentation, sweeping curve of the proscenium, and striking curtains.

A Westrex sound system, Century projectors, and Ashcraft lamps are used.







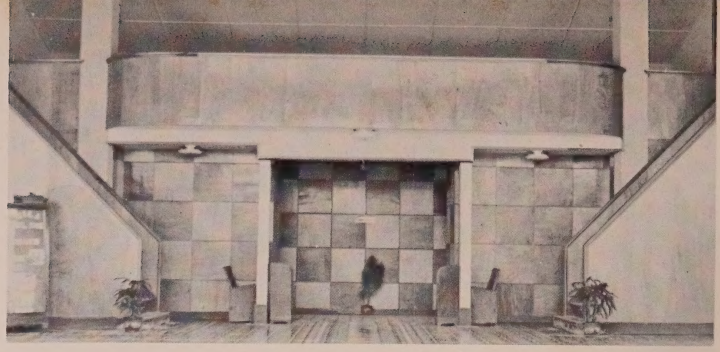
NACIONAL •

Mexico, D. F.

The mammoth 2,350-seat Nacional is one of Mexico's outstanding new showcases.

As one enters the lobby under the huge marquee and vertical sign, his attention is immediately drawn to the de luxe soda fountain in the lobby. A small candy stand lies beyond in the foyer.

Columns, which seemingly support the mezzanine, likewise appear to support the ceiling of the auditorium. Century projectors, Westrex sound system, and Ashcraft lamps have been installed.



STAR •

Cebu City, Philippines

The most recent of 19 theatres operating in one of the largest cities in the Philippines, the 800-seat Star was opened October 1, 1950.

The stone front with wooden lattice work leads into a lobby handsomely paneled in woods native to the islands. Small local shrubs add a decorative touch. Beyond the lobby lies a foyer equipped with a number of wicker chairs and tables.

Simplex projection and sound equipment, furnished by S. M. Berger & Co., Inc., Manila representatives for National Theatre Supply, was installed.

The Lamella Timber Roof

The Natural Merits of Wood are Complemented by Safety and Eye-Appeal Thru Interlaced Timbers

BRIEF: *Ever since man forsook the natural covering afforded by caves, he has experimented with new types of roofs . . . While other materials have been used extensively for shelter, wood has remained a select favorite . . . for it is easy to erect, inexpensive, and durable . . . Whatever type of serviceable structure is required . . . wood is usually always able to step proudly up to fill the part.*

The pressing need for structures with open, unobstructed floor space . . . in industry and other fields . . . has not found wood a slacker . . . The laminated wood arch has already proven its worth in meeting this demand . . . and now another offspring of wood . . . the lamella roof . . . has sprung forward to take its rightful place among the champions of structural devices . . . Self-supporting, decorative, and safe . . . it has already shown itself to be a choice building construction medium for edifices of all types . . . including theatres.

It is the intent of the following article to discuss briefly and analyse the origins, principles, and notable features of the lamella roof . . . and to submit it to the theatre architect, builder or owner for his judgment and . . . we are confident . . . his wink of approval also.

INTRODUCTION

The technological advances made in production techniques since the glowing dawn of the Industrial Revolution have brought prominently to the fore the need for large, unobstructed floor areas where assembly lines, conveyors, and other mechanical conveniences can operate to maximum advantage. Pillars of any size, of course, prevent the use of such modern methods, so keen attention in recent years has been given to the overhead structure of large, open areas, where it is possible for both men and machines to move about freely without the hindrance of roof-supporting impediments of any sort.

At the same time, there has been a demand for clear floor space from other fields of human endeavor, such as social, recreational, and transportation activities. Indeed, the need for roof spans supported only at the walls has spread out in a fashion similar to that of an octopus to encompass auditoriums, garages, gymnasiums, skating rinks, armories, and recreation halls, wharf and pier structures, airplane hangars, large barns, and a veritable plethora of other types of buildings.

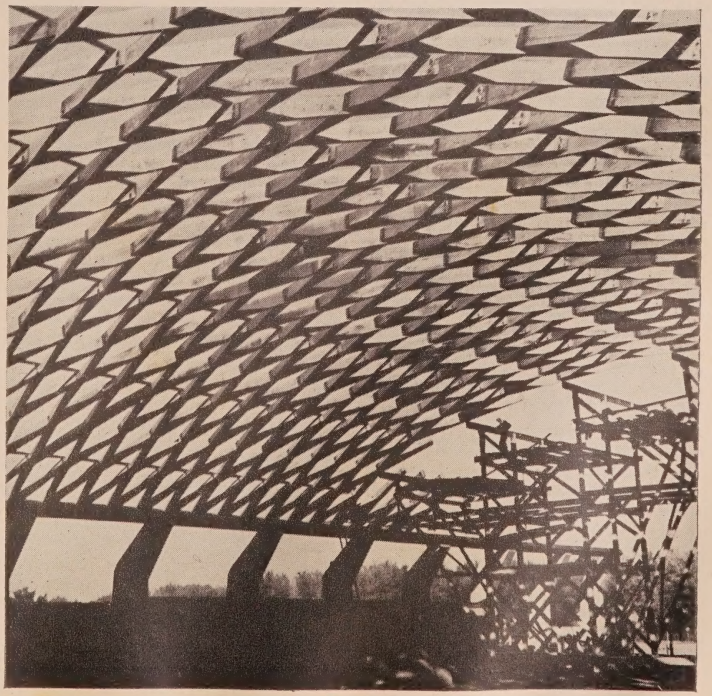
The motion picture theatre in recent years has also been included in the array of buildings which have come to appreciate and utilize the advantages of a roof span supported without the necessity for floor pillars. The editors of THEATRE CATALOG have faithfully traced the course of this trend throughout the years. The quonset arch, as a theatre structural method, was introduced and fully discussed in the Fifth (1946-47) Annual Edition, while the laminated wood arch method was analyzed in the Fourth (1945-46). The progressively successful applications of these two media in new theatre structures were recorded in all later editions. Our attention is drawn this year to still another construction technique—the lamella roof. This unique device, first introduced by an alert theatre architect on the West Coast, is presented here for study and judgment by others concerned with the physical problems of the theatre.

History

Lamella roof construction was invented in Europe in the year 1908 and made its United States debut in 1925. Since the time of its introduction, it has been quite extensively employed in a variety of buildings, particularly in areas where its possibilities have been drawn to the attention of progressive-minded architects and engineers. The clear, uninterrupted span it affords from side to side of an inclosure, together with its other advantages, has met with enthusiastic acclaim on the part of those who have used it.

As far as the theatre field is concerned, the West has witnessed the greatest use of lamella roof structures. The noted architect, S. Charles Lee, has designed a number of theatres employing this type of roof structure. Thus far, progress of the lamella roof in the East has been halted to a large extent by stringent state building codes which demand the use of steel-supported roofs in theatres seating over 500 persons. Since roof restrictions on theatres of less than 500-seat capacity are much more lenient if proper walls or open space separate the house from adjacent buildings, the lamella roof may well come more into its own in this segment of the industry. In time to come, since some Eastern states have approved quonset-type construction for theatres seating over 500, present regulations may be eased up to permit larger structures of the lamella type.

LAMELLA TRUSSLESS ROOFS are arch structures consisting of a series of short sections arranged in diamond pattern to form a continuous arch. Their unique design follows accepted engineering practice.



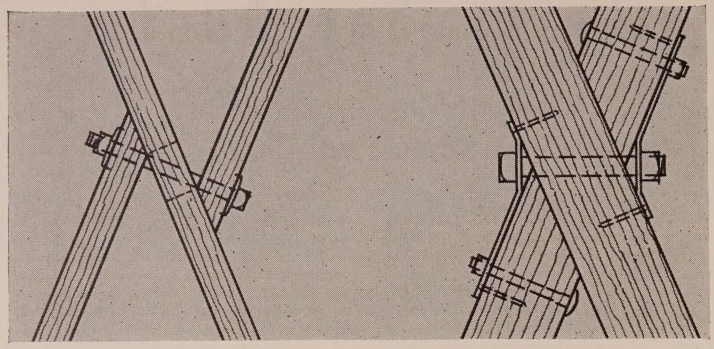


FIG. 1. Left: (A) Common joint. Right: (B) Special joint.

PRINCIPLES OF DESIGN AND CONSTRUCTION

Description

The lamella roof is made up of comparatively short timbers of uniform length called "lamellas." These short pieces are bevelled and bored at the ends, and bolted together at an angle. They thus form a network of structural timbers. Standard lamella roofs use the common or eccentric joint (Fig. 1a), but special roofs and extremely large spans make use of special joint connector plates (Fig. 1b).

The network of lamellas forms an arch of mutually braced and stiffened timbers. In view of the fact that it is an arch, rather than a truss, the roof naturally exerts a horizontal reaction in addition to the vertical one. The net result of these two reactions is the roof thrust distributed to thrust supports—tierods or buttresses, generally spaced from 12 to 20 feet—by timber, steel, or concrete sill beams between these supports. If a continuous wall support for the sillbeam is available, it is only necessary to design it for the horizontal reaction (Fig. 2).

Types of Roofs

First among the four types of lamella roofs is the **tied segmental arch** (Fig. 3a). Inasmuch as the thrust is taken up by tierods in this type, the method is used primarily in cases where buildings occupy a full lot area and where the type of building in question precludes the use of buttresses, or extended wall columns—developed as cantilever beams—to take up the roof thrust.

The horizontal reaction taken up by the tierod is determined by the formula:

$$H = \frac{\text{Dead + Live Load per sq. ft.} \times \text{span}^2 \times \text{tierod spacing}}{8 \times \text{Roof rise}}$$

The tierod area required at the root of the threads is obtained by dividing H by the permissible tensile stress for steel. The roof rise varies between one-sixth and one-seventh of the roof span considered as a whole. A lamella roof is completely self-supporting when tied in this fashion, and it exerts only vertical pressure equal to the live and dead load upon the wall or column supports. It is important, of course, to anchor it properly to resist wind action.

In the case of the **buttress segmental arch** (Fig. 3b), the thrust, previously defined as the natural resultant of horizontal and vertical reactions, is taken up by buttresses, concrete or steel beam columns, timber or steel bents, or rigid frame bents. The roof rise variation falls between one-sixth and one-quarter of the roof span; the customary rise approximates one-fifth.

This particular type of roof is most desirable, from the economical point of view especially, in buildings where high clearance centers are required. Auditoriums, gymnasiums, field houses, indoor tennis and badminton courts, hangars, and exhibition buildings are a few typical examples. Buttresses are extremely advantageous in these applications, for they permit the use of low and light sidewalls.

The **parabolic arch** (Fig. 3c) is a type of lamella roof construction in which the roof generally starts from the floor line or atop a low foundation wall. This wall is reinforced to take up the relatively low horizontal thrust component, while the floor construction acts as tie membrane.

The parabolic lamella roof has been found to be readily adaptable to small churches, indoor rifle ranges, and small motion picture theatres, for it combines wall and roof construction into one unit.

The **gothic arch** (Fig. 3d) type of lamella roof represents a three-hinged arch. It may be used with tierods to cover buildings which possess a trapezoid floor plan. When used in church designs, it can be started above the side aisle height to span the nave. Low, buttressed walls may mark its starting point in storage sheds with overhead conveyors.

Roof Plans

Three principal basic arrangements are possible for the lamella roof. These patterns may be varied and combined to provide sufficient leeway in design to meet any roof requirements.

(a) The continuous lamella roof carries the network from gable wall to gable wall and acts as a horizontal wind-truss between gable walls (Fig. 4a).

(b) The lamella roof with sloped and raftered end, or ends (Fig. 4b), stops with its network 15 to 20 feet from one or both ends. This space is covered by simple rafters supported by the lamella roof endarch and the end wall. These raftered ends provide a warped surface of varying slope.

(c) The lamella roof with broached ends (Fig. 5) is formed by intersection with lamella roofs of the same radius which spring from the end walls. These broached ends may be rectangular or multi-sided. Lamella roofs can also be made to intersect as occasion requires for L,T,U, or cross-shaped floor plans.

Erection

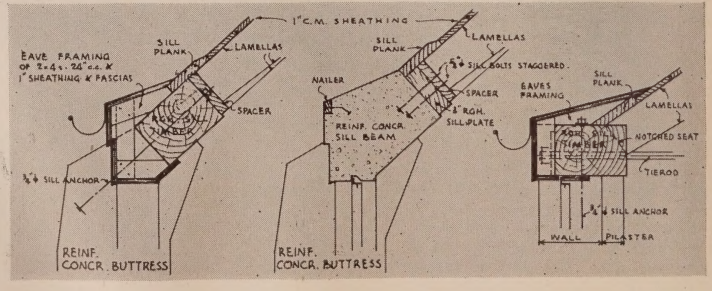
Since all units are precision-fabricated in accordance with specifications, erection of lamella roofs is a fairly rapid process. The units are generally erected from a movable scaffold equal in width to that of the roof and the depth of one bay (spacing of tierods). After the timber sills—or spacers in the case of steel or concrete beams—have been placed, the lamella network is woven from the sill up, from both sides, to meet and join in the center. Spacer boards set over the lamella joints assure uniform spacing and obviate any chance of the network spreading laterally, while and after the scaffold is moved into the next bay for weaving another roof section.

PHYSICAL FACTORS AND ADVANTAGES

Acoustics

Insulation or acoustical board may be employed in the panels to augment the naturally good acoustical properties of lamella roofs themselves. The network as an entity breaks up and reflects the sound in numerous directions, and the

FIG. 2. Typical sill details. (A) Tilted timber sill. (B) Reinforced concrete sill. (D) Flat timber sill.



panels absorb a considerable part of any sound. The percentage depends on whether standard, low density, scored or drilled board is used.

Insulation

Insulation of the lamella roof can be effected in the same manner, and with equal force, as truss and rafter roofs by a simple application of insulation board over the sheathing, or to the underside of the lamellas.

Even greater effectiveness may be attained by applying insulation board inside the lamella panels. This procedure provides thin confined air blankets between insulation and sheathing which are sealed off against the lamellas by a continuous moulding (Fig. 6).

Heating, Ventilating, and Cooling

A forced air blower system and unit heaters, which can also be employed for air circulation, ventilation and cooling, have been found to accomplish the heating of lamella roofed spaces most effectively. Since it stands to reason that the insulation value of the surrounding wall and roof areas of a room govern the amount of heat loss which will have to be compensated for by the heating unit, a building with a buttressed lamella roof should be more economical to heat, or to cool, for that matter, than a building of similar proportions with orthodox roof construction for the same floor clearances, of similar type wall construction and roof insulation.

Lighting

It is possible to daylight lamella-roofed buildings by means of conventional windows set in sidewalls, large window areas in short-length constructions, monitors, ridge-type skylights, or corrugated wire glass expanses laid over portions of the roof network. By painting lamellas appearing in light-admitting areas white, light entering through monitors or skylights can readily be diffused over the entire floor area.

Artificial lighting conduits in buildings of a commercial nature can be run under the network or along the tierods in tied lamella roofs. When lamella roofs are to be treated ornamentally, it is advisable to run the conduits on top of the network, parallel to the sill, with sheathing boards ripped to abutt the conduits. Gable walls will secret conduit risers and interconnections most inconspicuously. Outlet boxes should be attached to the underside of the sheathing (Fig. 6).

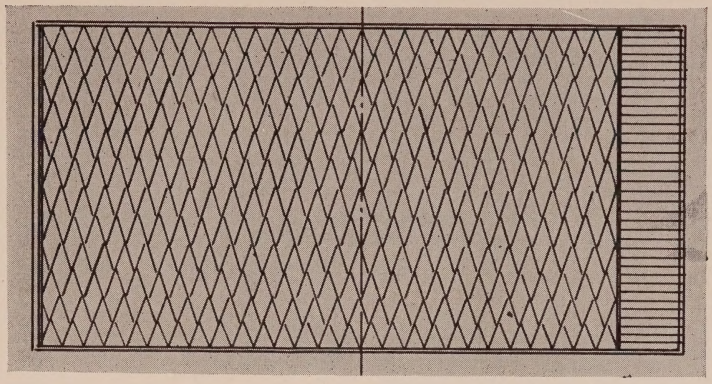


FIG. 4. (Above) Variations in roof plan. (A) left, a continuous roof. (B) right, a roof with a raftered end. Many variations are possible.

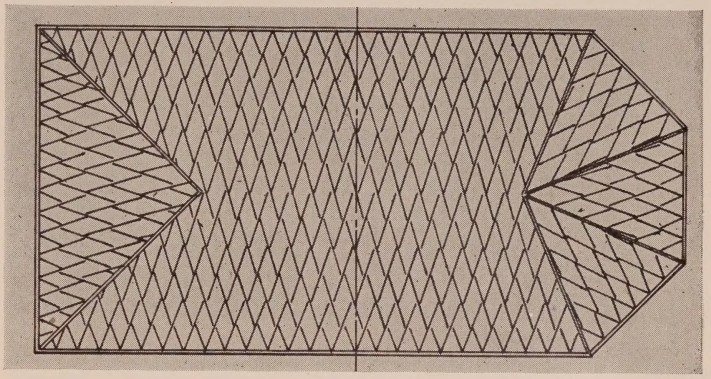


FIG. 5. (Below) Variations in roof plan. Broached ends may be rectangular or many sided as desired. Through this L, T or H shapes are available.

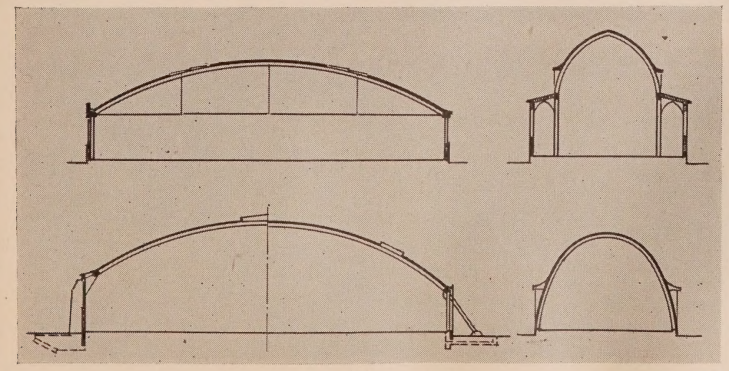
Wind Resistance

A lamella network forms a natural curved wind-truss spanning from gable wall to gable wall, thus permitting the walls to be designed as supported on top and bottom against wind pressure.

The curvature diverts, rather than blocks, the wind in the direction of the arch. It is generally accepted that the effective wind pressure against cylindrical objects, such as chimneys, tanks, and curved roofs, is two thirds of the wind pressure against a plane equal to the vertical projection of the curved object.

The relatively closely spaced lamellas permit frequent and efficacious anchorage of the roof to the sidewalls. Since all connections are bolted, a high resistance against excess interior pressure, due to winds or other causes, is afforded.

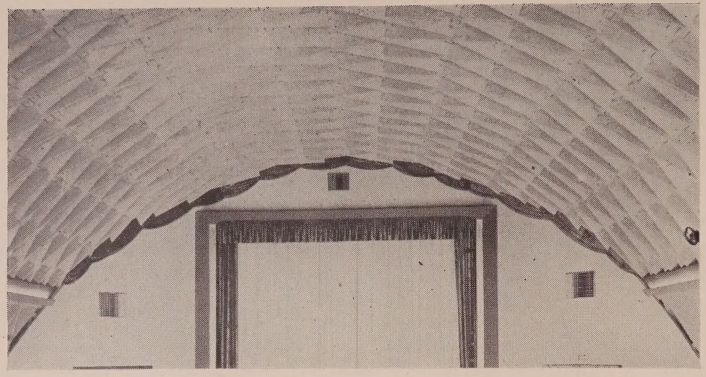
FIG. 3. Typical Lamella roof arches. Upper left: (A) Tied segmented arch. Lower left: (B) Buttress segmental arch. Lower right: (C) Parabolic arch. Upper right: (D) Gothic arch.

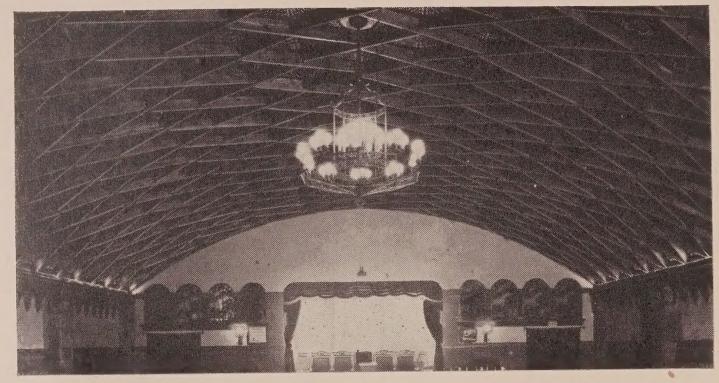


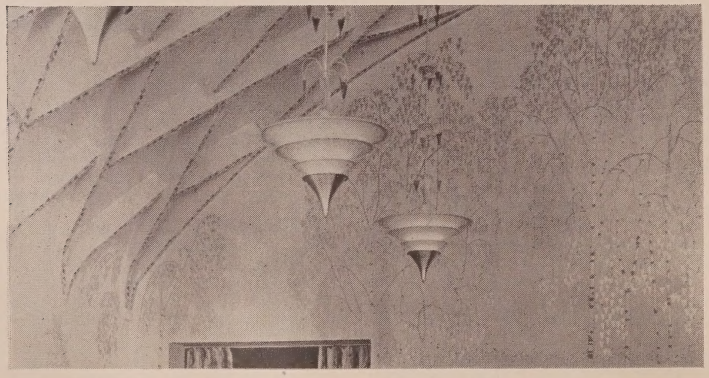
Shrinkage

Due to the fact that shrinkage in wood occurs principally across the grain, shrinkage along the grain is minor. Since the grain of lamellas runs with the span of the roof, the possibility of settlement, due to shrinkage and slippage of bolts in one-sixteenth-inch oversized holes of joints, is very slight indeed, and any which does take place occurs over the entire roof area.

Across-grain shrinkage depends to a large extent on the moisture content of the lumber. Since only well-seasoned or kiln-dried lumber is used for lamellas, this factor is hardly worth serious consideration. Even during the war years, when only partially seasoned lumber could be obtained, roof contours showed few adverse effects. Bolts of common







INTERIOR CEILING DECOR can vary with the decorative plan. TOP: The diamond shaped outlines have been painted in one solid color. CENTER: Stenciled ornamentation has been framed into each diamond. BOTTOM: Plastered walls and plaster finished arches stenciled into the room's decorative ornamentation.

type joints remained tight in tension, and any cross-grain shrinkage was taken up by slight rotation within the joint. Negligible shortening of the roof arch was anticipated through an initial camber during erection.

Fire-Resisting Qualities

A widespread fallacy lies in the belief that steel is absolutely fireproof, while wood is not. Although it is true that steel is incombustible, it is not fire-resistant, unless all surfaces are protected by fireproofing materials which are capable of insulating it against fire temperatures. If such protection is not provided, steel framing members in compression will collapse under relatively low fire temperatures.

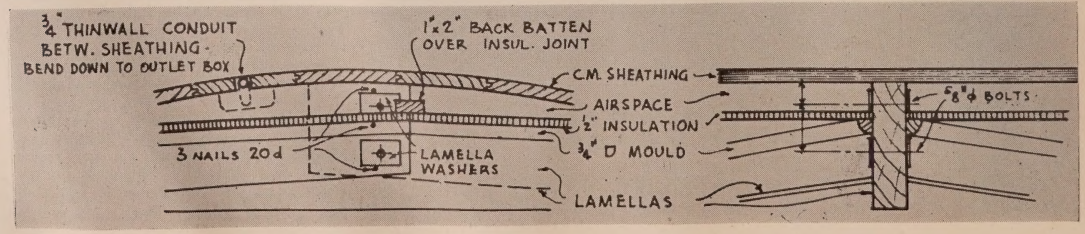
Wood lamella roofs, on the other hand —using two-inch lamellas for spans up to 67 to 100 feet, in accordance with roof-loading conditions—carry the same fire insurance rates as those for similar roofs supported by unprotected steel trusses. By the very nature of its construction, which eliminates vertical supporting members and is arched high above the floor, the lamella roof escapes early damage by fire. Furthermore, as an added safety feature, a good-sized hole may be burned through the network, sheathing, and roofing at any point without causing the entire roof structure to collapse, for loads automatically redistribute themselves to less damaged timbers near the burned-out section.

In addition, the panels formed by the lamellas provide formidable firestops and will halt the rapid spread of fire by the roof structure itself. Since a rather lengthy period of time will elapse before charring of timbers materially weakens a lamella roof structure, any fire can usually be put out long before serious damage is done or the danger of collapse becomes imminent. Lastly, further fire insurance benefits, in addition to those afforded by the slow-burning lamella roof type construction, can be secured by chemical fireproofing of the original lamella lumber, or by installation of a sprinkling system for the roof area which can be set up conveniently and effectively with maximum sprinkler head spacing used.

Earthquake Safety Features

Although a relatively small portion of the total earth's surface is subject to earthquake tremors, the lamella roof is a priceless safeguard against serious damage to human life and property in areas where such catastrophes do strike from time to time. If, for example, an earthquake should occur in the vicinity

FIG. 6. Elevation and section of Lamella joint showing application of panel insulation and placing of electrical conduit.



of a California theatre with a lamella roof, there would be no chance of damage caused by falling fragments. Due to its interlaced construction, it is impossible for a lamella roof to split into pieces, as other types of roof structures likely would under severe stress. If natural disturbances grew severe to the point where no roof could stand the strain, a lamella type would fall as an entity, in "basket-like" fashion, and not in dangerous segments. Even should this ultimate contingency take place, there is, nonetheless, good reason to believe that the lamella roof would not inflict serious harm to people beneath it because of its singular high-arched construction.

MISCELLANEOUS CONSIDERATIONS

Cost

Free spans of great width are provided by lamella roof framing at reasonable, competitive cost. Experience has shown that this type of roof structure, when used in combination with such structural thrust supports as buttresses, has more than proven economical in initial cost and operation. The cost per square foot varies with the span, roof design load, location, and wage scales in effect in a particular locality. Estimates may be obtained from member companies of the Lamella Associates scattered throughout the country.

In general, lamella roofs are furnished complete with roof deck erected and ready for the roofer. In some instances, the Lamella Associate provides the prefabricated units, plus hardware and detailed erection diagrams and specifications, and the general contractor takes the job from that point. In other cases, the Lamella Associate furnishes detailed cutting and erection diagrams and specifications, along with special hardware, on a fee basis. An experienced lamella foreman is usually available on a **per diem** basis for such occasions.

Appearance

The structural elements of the lamella roof have won enthusiastic acclaim for their decorative effects in churches, auditoriums, ball rooms, lodges, restaurants, cocktail lounges, and theatres. Some more enterprising architects and builders have accentuated the natural appeal of the pattern by staining the lamellas; still others have capitalized on the native beauty of the wood by using a natural finish, or by painting it.

Finally, rigid insulation board in plain colors has been used in the panels formed by the lamellas, or patterns have been stenciled right on the lamella edges. In short, the variety of pleasing effects to which the lamellas naturally lend themselves is almost infinite in its scope.

CONCLUSION

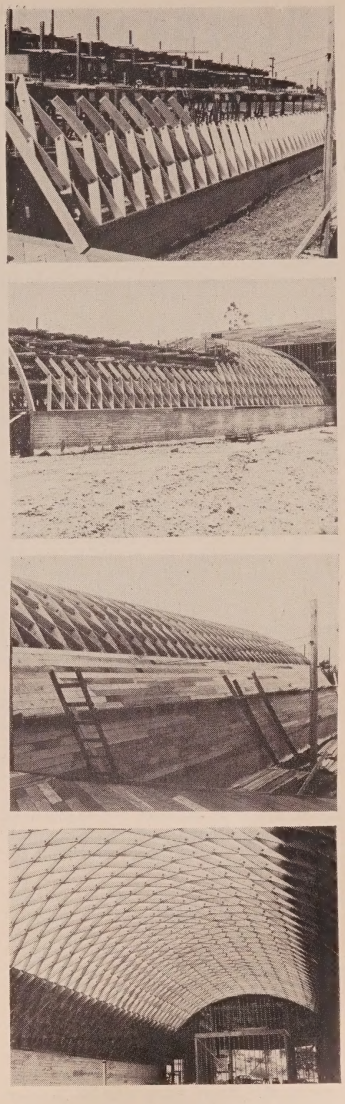
Thus the lamella roof marks another milestone along the road to new and better forms of theatre construction. It has been objectively presented for the due consideration of theatre architects, builders, and owners, with the thought that they may find its rather unique characteristics particularly advantageous when next they turn to the drawing boards.

Aside from offering the perennial insulation, acoustical, aesthetic, and economical advantages of wood, the lamella roof is distinguished by safety factors which should endear it to the heart of every far-sighted theatreman. Its intrinsic adaptability to all sorts of decorative schemes also makes it a construction device well worth further attention.

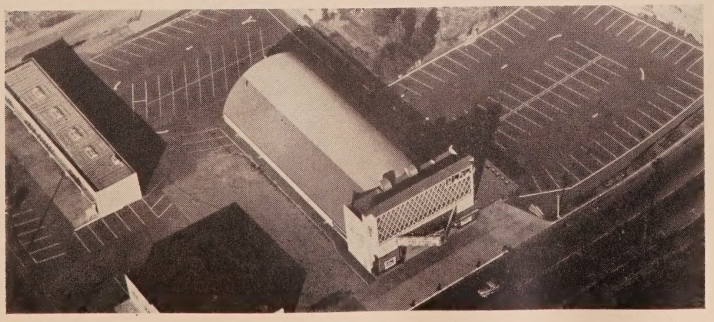
It is not reckless to predict a rosy future for the lamella roof because of the many appealing factors it incorporates. Although its use, in the East at least, may for a time be restricted to smaller theatre construction, the passing of time should see it make steady inroads into larger projects with the assets it has to offer. For the time being, however, it can admirably play an important role in the small theatre construction field throughout the country because it is in this building category that the low cost of wood is a particularly entrancing element.

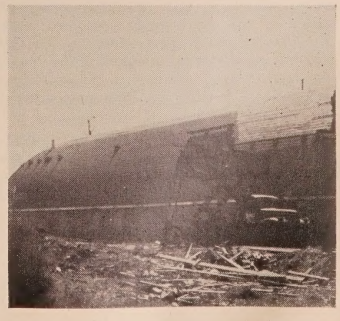
Furthermore, from a practical point of view, building codes to the contrary notwithstanding, the safety of the audience is not a consideration if the theatre building is of a slow-burning construction. In a theatre fire, the audience that is not evacuated within ten minutes is the victim of bad planning and inadequate exits, and not of the fire itself. Therefore, if the theatre building is isolated by streets or parking lots and shares no common wall with neighboring buildings, the same slow-burning construction permitted in schools, churches, auditoriums, garages, and similar buildings in the same area, should be permitted in it. Well-constructed wooden trusses, which have been adequately chemically fireproofed, have been known to hold up under actual fire conditions, long after steel girders beside them have bent and collapsed.

Wood should not be discounted as a theatre structural material.



THE HELIX, LAMESA, CALIF. This gem of a medium sized theatre rose from the concrete foundations (top) through the various stages of construction, sheathing, roofing and interior decoration to the finished air view at the lower left.





Overhead Stage Structure Requirements

An Expert Analysis of Correct Gridiron Design From the Operational and Serviceability Angles

By C. E. TOMPKINS
President, J. R. Clancy, Inc.

INTRODUCTION

Sophocles is credited by Aristotle with the introduction of the stage curtain in a Roman theatre at Pompeii. The operation of this curtain was just the reverse of our modern stage drops in that it lowered into a narrow slot in the front of the stage and was raised by slaves from a catwalk above. For the same effect, centuries later, a similar curtain with a modified method of raising was long used at the old Hippodrome Theatre in New York.

Up to the sixteenth century, stage effects were mostly suggestive. Scenery, however, came into use with the popularity of masques and pageants at the Court of Charles II. Available records show that the first theatre to use movable scenery was the Dorset Garden Theatre in 1660, although it is not unlikely that elaborate "set scenes" were used in the epoch of Louis XIV, as found illustrated in engravings of that period.

Garrick's scene painter, one De Loutherbourg, was one of the most popular artists of that day, and many innovations are credited to him. He designed the scene on a flat piece of canvas and inaugurated the fashion of "set pieces" and "raking pieces." He also invented transparent scenes with representations of moonlight, sunshine, firelight, and volcanoes, and achieved new effects by the wise use of silk.

Previous to 1870, most of the existing theatres of the better class in America were of the old European type with a large apron extending many feet in front of the curtain down to the footlights and running at the sides along tiers of proscenium boxes. At that time there was practically no height to the stage, and such hanging as was used was confined to a few small borders. At each side of the stage, approximately 20′ above the floor, were located wooden grooves in which flats were used. They were framed pieces of scenery, usually 20′ high and 12′ or more in width, which were closed in at the conclusion of the scene. These stages required considerable room off stage, approximately twice as much as the stage proper, especially as the larger productions came in, for the storing of the large scenery which went on and off stage *en bloc*, a bit of stagecraft practiced by the Romans as early as the year 63 A.D.

Such a stage today would be impractical from the standpoint of cost per square foot of stage area, and thus the method of adding additional height to the stage to permit the "flying" of drops, painted scenery, etc., came into use and, incidentally, produced a more complete and better theatrical atmosphere. The Old Bowery Theatre in New York is said to have had the first "fly" gallery and loft which permitted the raising of drops straight up and out of sight.

On September 12, 1866, the "Black Crook," the first great American spectacular production, was presented at Niblo's Garden by Jarrett and Palmer. Later came those really great Drury Lane melodramas of the type of "The Lights O' London" (produced in America at the Union Square Theatre, December 6, 1881), which gave us the ultra-realistic combination of artistic and mechanical effects that set the standard for many great scenic productions that followed.

In order to accommodate the mechanical equipment necessary for raising and lowering a multiplicity of drops, lights, sound horns, picture screens, painted sets, etc., and also to carry the load imposed by these pieces, the modern type of upright gridiron came into use and is now generally employed in all modern theatres.

THE STAGE GRIDIRON

There is an old axiom among the stage crafts that "a stage is no better than the gridiron," and to those who are called upon to do what appears to be the impossible in the handling of scenery, heavy props, curtains, drapes, etc., and the readying of various types of road shows on short time, there is ample proof that this axiom holds true.

The stage gridiron is called upon to support all of the working mechanism for the stage at practically any point of suspension, since many shows carry specialized equipment that requires spot lines in positions other than on the regular loft-block channels. It follows, therefore, that the gridiron should be amply constructed from the standpoint of strength, be readily accessible, and well lighted, so there will be no delay in placing these extra spot lines when the show comes in. The layout and construction of the gridiron obviously controls the flexibility of the stage. Placed as it is, high above the stage floor, and usually accessible by only a straight ladder up the side wall (which few men outside of the mechanics care to climb), this important part of the stage is given comparatively little thought. It is seldom, if ever, inspected or studied by architects and engineers making the design.

BRIEF: ***Well-grounded though they may be in all other matters pertaining to the motion picture house and its construction . . . many theatre designers are believed to be sorely lacking in a thorough knowledge of one of the most important elements in its layout . . . overhead stage structure requirements . . . Without a well-designed and smoothly functioning gridiron . . . for example . . . curtains and drapes cannot be handled properly.***

In keeping with THEATRE CATALOG's avowed mission of bringing to its readers the most comprehensive information available . . . on all matters pertaining to the theatre building and its equipment . . . the editors requested one of the nation's leading stage designers and engineers to cover this important aspect of construction in complete detail . . . Discussed in this authoritative survey are such important points as: screen selection and location . . . asbestos curtain height . . . spacing of carrying beams . . . spacing of head-block beams . . . distribution of loads . . . setting of off-stage head blocks . . . use of supporting hangers . . . head clearance . . . loading platform . . . accessibility . . . underhang type of gridiron, etc. . . . Even the design of ventilators is treated in conclusion.

Screen Factors and Sight Lines

The design of the gridiron starts by first selecting the proper size picture screen for the proposed auditorium and, second, by properly locating the picture screen on the stage. The location of the screen is the second set back of the Main Act curtain, which usually works out approximately 6′ back of the proscenium wall. Third, the elevation of the projection room portholes should be established, and then sight lines taken from the projection room portholes to the top of the picture screen proper. It should be borne in mind that the image size of the picture screen should be at least 18″ above the floor of the stage. The sight lines should pass at least 3′ under the proscenium arch to permit the use of a valance to enhance the appearance of the proscenium. It will be noted that the image area of the picture screen will be somewhat lower than the bottom of the proscenium valance, due to the angle of the sight line, and, in general practice, the Grand Drape is used to trim down to the top of the picture screen.

Asbestos Curtain Height

After the above preliminaries have been completed, the height of the asbestos curtain, which in all cases must lap the proscenium opening at the top by 18″ in order to comply with regulations, is calculated. It would, therefore, seem logical that, in order to clear the bottom of the asbestos curtain above the proscenium opening when it is in the "up" position, one should have twice the height of the asbestos curtain so as to get it up out of sight, but this is not quite enough. It is necessary to attach

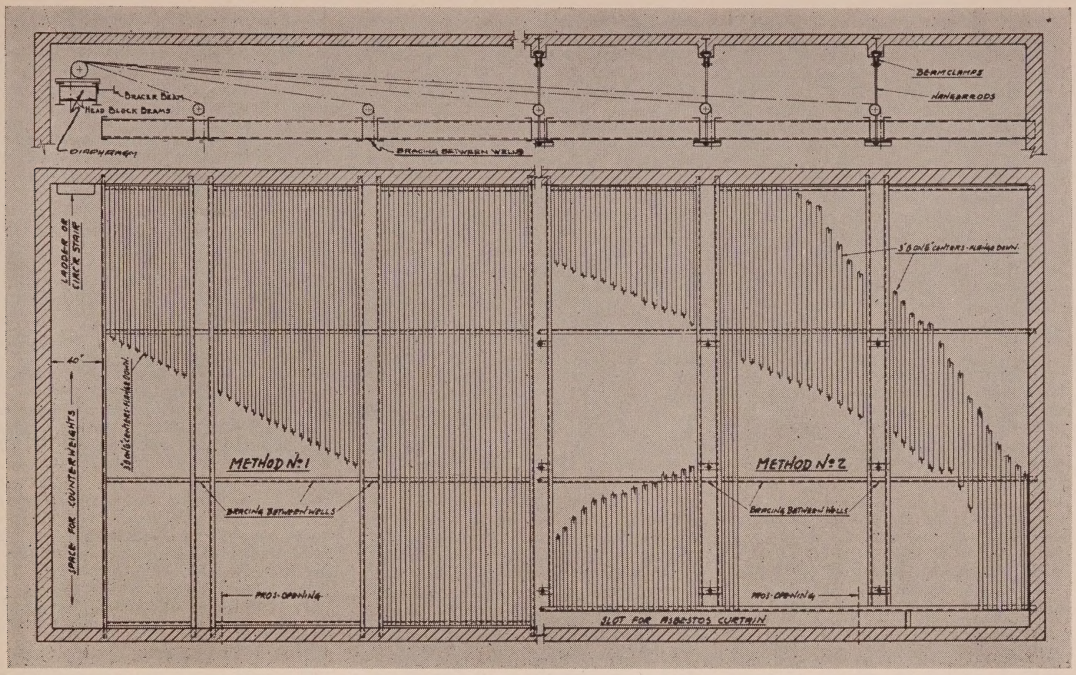


FIGURE 1. METHOD NO. 1—Common type of gridiron used when plenty of height is available to operate the asbestos curtain underneath the gridiron or where the total height of the building is not important.

METHOD NO. 2—By hanging the gridiron from the roof beams and passing the asbestos curtain up through the slot in the gridiron. Lighter gridiron steel may be used and the total height of the building reduced.

cables to the top of the asbestos curtain, and the attachments occupy some space; consequently, it is advisable to add 3′ to these figures. For example, if the proscenium opening is 30′ high, the asbestos curtain would be 31′6″. By doubling this figure we would have 63′ and, if we allow the 3′ for the tie-off and adjusting purposes, the correct height of the gridiron would be 66′ to the bottom side of the gridiron steel. It is not good practice to place the valance in front of the asbestos curtain in order to cut down this height because many states and municipalities do not permit the valance in front of the asbestos curtain.

Where this procedure does not work out conveniently, it is possible to provide a slot in the gridiron through which the asbestos curtain may pass (Method #2, Fig. 1), and, by using brackets on the proscenium wall above the gridiron to support the blocks, it would be possible to cut the foregoing figure down by three or four feet. Since this latter method, however, involves some structural problems and additional installation costs of the asbestos curtain, Method #1 is generally used. The construction of the gridiron is as shown on the schematic drawing (Fig. 1). Regulations prescribe that the gridiron shall be at least 50% open. This is to permit smoke and gases to travel upward and outward through the ventilators in the stage roof in case of fire.

The method of using 3″ channels on 6″ centers with flanges pointed downward, as shown in the drawing (Fig. 1), has been accepted as standard for many years, and none of the numerous other types of construction tried has proved satisfactory. The problem of supporting these channels is one that must be solved with each individual job, depending, of course, on the span and the load to be carried.

Spacing of Carrying Beams

The next important step is to determine the correct spacing of the carrying beams or "wells," as they are generally termed. To do this intelligently, it is necessary to make a layout of the stage in order to determine the number of sets and the total combined loads of these sets (Fig. 2). At this point the width of the proscenium opening plays an important part in the design, since the number of blocks necessary to pick up properly the various pieces of equipment is determined not only by the load, but also by the width of the proscenium.

The operating or "promp" side of the stage and corresponding head-block wells may be on either side of the proscenium opening. The governing factor is the placing of the scenery loading dock on the opposite side of the stage from the operating equipment; this is important from the standpoint of smooth operation.

As an illustration, if the proscenium opening is approximately 40′ wide, the sets will automatically become 5-line sets on 10′ spacing, and, since with the 40′ proscenium the regular stage equipment (border lights, etc.) would be comparatively light, it is in keeping with the principles of good design to set the loft-block wells to accommodate 8″ diameter sheaves. If it is assumed, however, that a modern set of sound horns, weighing from 2,000 lbs. to 2,800 lbs. (cradle included), is required, it is necessary to use 12″ diameter loft blocks, and the 12″ diameter block then becomes the governing factor in spacing the distance between the channels of the loft-block wells.

All stage equipment is built to standards and it is always desirable to space the steel in the gridiron so as to utilize the standard blocks, since special construction runs into additional money and sometimes additional installation costs. It will be noted that the cables over the loft blocks are single cables. This permits narrower spacing of the loft-block channels than is possible on the head-blocks which will be discussed later; but, in any case, the loft block should so set as to distribute the load equally upon both channels. This factor is quite important in the interest of good practice. The two outside wells of the gridiron obviously should be tied in with the columns on each side of the proscenium and need not be located away from these columns, as is sometimes done. This method will work out satisfactorily on all normal width stages.

In the case, however, of extremely wide prosceniums—80′ and 100′ widths—the problem of packing these wide curtains away on each side of the stage arises. Due to the bulk of the curtain, it is necessary to get additional supporting loft blocks several feet back of the "up"

and "down" stage line of the proscenium opening. These blocks may be of the "spot" type and may rest on the gridiron floor with the cable passing down between the 3" channels of the floor. This point is mentioned here because in many cases a gridiron is designed with very flimsy supports between the outside loft blocks several feet back of the "up" stage. When dealing with exceptionally large stages, it is always desirable to get at least one carrying beam spaced 6' to 8' on each side of the outside loft-block well. The "spot" block will then rest over this beam, and the condition will have been met properly.

Spacing of Head-Block Beams

In determining the spacing of the head-block beams, reference is again made to the stage plan (Fig. 2) and the maximum load carried by any one set, not including the asbestos curtain. If modern sound horn equipment is again taken as an example, it is good practice to use at least a 16" diameter head block as the governing factor. The operating line passes up and over the sheave and back down between the head-block beams. Thus, the spacing of the beams must be somewhat greater than the full diameter of the head-block sheave.

It is advisable to allow 4" clearance between the beam flanges on each side of the head-block sheave, when in position, in order to give proper clearance for the lines and, at the same time, provide room for clamping the head blocks to the head-block beams. In determining the elevation of the head-block beams, it is recommended that the top flanges of these beams be placed not less than 1' 6" above the level of the gridiron floor. At least 1" clearance should be provided above the top of the largest head block used.

Distribution of Loads

A typical distribution of gridiron loads is shown in (Fig. 3). This drawing should be helpful in laying out the steel, but one should bear in mind that as the stage increases in length (this is based on a 40' proscenium), the load accelerates rapidly. In the case of the gridiron proper, this load increase is not too serious, since, as the width of the proscenium opening increases, the loft-block wells increase in number, and the load is divided equally among the loft-block wells. However, as far as the head-block beams go, the carrying of this accelerated load must be considered. In determining all of the carrying beams, it must be realized that stage equipment is a static load.

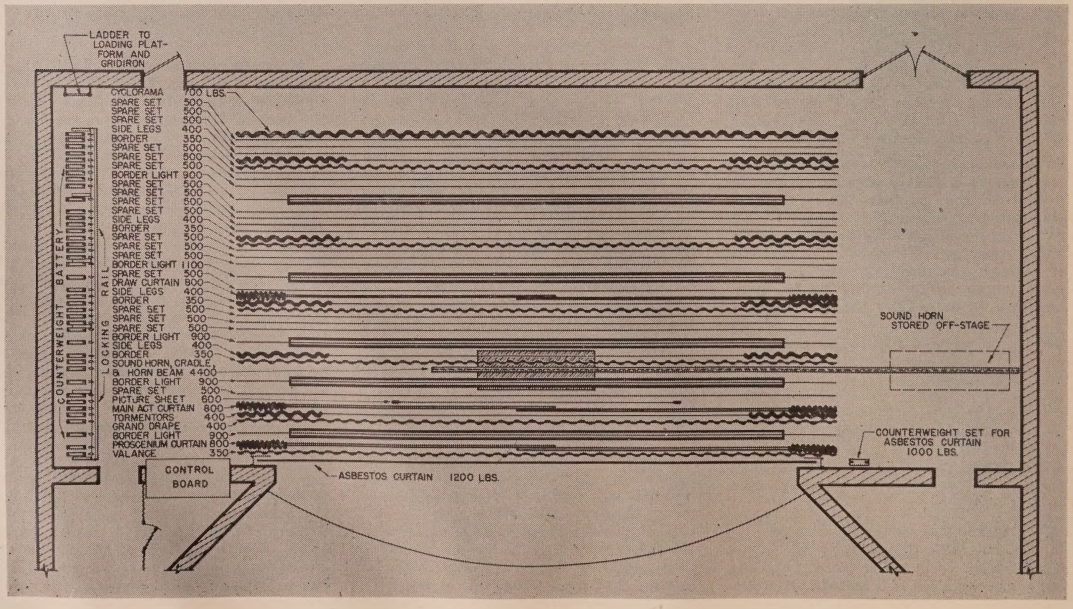
Regulations require that the asbestos curtain head block be independent of the regular head-block battery, and it is, accordingly, set on the gridiron with some reinforcing steel (usually by the rigging contractor) at a point closely adjacent to the proscenium opening. The counterweights are guided by a special counterweight track attached to the proscenium wall. Therefore, in calculating the load of the head-block beams, the weight of the asbestos curtain may be deducted. The loads figured (Fig. 3), are intended to reflect the weight of the curtains with the stage equipment included.

Heretofore, in referring to asbestos curtains, only the flexible type has been considered. In many cities steel frame curtains are demanded, especially in proscenium openings over 60' in width. Steel frame curtains vary in weight from 8 to 20 tons. Some additional provision must, therefore, be made for handling this load, and the method of rigging is somewhat different than that used for the regular flexible type curtain.

In the case of the steel frame curtain, it is customary for the rigging contractor to provide two longitudinal channels which set on the gridiron and run all the way across stage from wall to wall. In some instances they are not extended from wall to wall, but only far enough to accommodate the curtain rigging equipment; in such cases, however, they should be securely braced longitudinally. Since these channels are set as close as possible to the proscenium wall with a spacing of not over 10" between the channels, this load is quite conveniently carried without any additional reinforcement. It is customary, in the case of steel frame curtains, to use a double counterweight set with counterweights at both ends of the curtain. The lead lines, running over the loft blocks and down to the curtain, are alternated over the top of the curtain in such a manner as to equalize the longitudinal pull. If it is felt that the regular gridiron carrying beams are not sufficient to carry this load, it is sometimes practical to carry part of this load on the roof beams by means of hangers extending down to the gridiron floor.

The moment of force of the head-block beams (also illustrated in Fig. 3), indicates that it is at an angle of approximately 45° with the center of the sheave, thus imposing the greater part of the load on the on-stage head-block beam. If desired, a lighter beam can be safely used on the wall side or the off-stage beam. There is a tendency for the head-

FIGURE 2



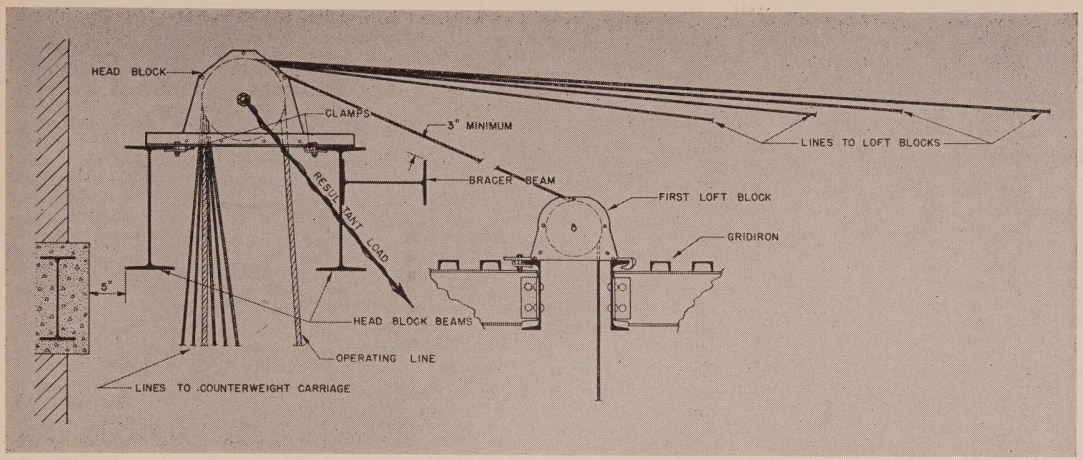


FIGURE 3

block beams to buckle, since there is considerable side pull that must be taken up by the flanges of these beams. Wide-flange beams are, therefore, most practical for this purpose.

The necessity of providing a bracer beam (as shown in Fig. 3) on a stage with considerable depth to offset this tendency to buckle has also been proved. The question of whether a beam or a channel is used depends on the load involved and the span. In any event, the bracer beam should not touch the bottom of the top flange of the head-block beam, and the on-stage flange of the bracer beam should not interfere with the cable leading from the head block to the first loft-block well. The two head-block beams should be connected by diaphragms at approximately 8′ spacing so as to distribute this load over both beams.

Avoidance of Drilling

The foregoing again brings up the importance of properly designing the carrying beams for the stage equipment. When the engineer determines the size of the beams to be used, he does not take into consideration the drilling of numerous holes in the beams, a step which, of course, has a tendency to weaken them. The stage equipment manufacturer has this same thought in mind when he builds his equipment to clamp on the beams to avoid this extra drilling. Hence, it is always best to allow proper clearance for the flanges on both the loft-block wells and head-block beams in order that the equipment may be clamped into place rather than to resort to drilling, a practice which not only weakens the beams, but materially increases the cost of installation as well.

Setting Off-Stage Head Block

In setting the off-stage head-block beam (the one nearest the wall), it is good practice to allow a 5″ minimum clearance between the flange of the beam and the wall. In using the 5″ clearance between the flange of the off-stage head-block beam and the wall, the construction of the side wall underneath these head-block beams all the way to the stage floor should be taken into consideration. If the wall is perfectly smooth, and there are no projections, the 5″ clearance is ample to receive the guide tracks, carriages, etc., with relation to the blocks overhead. However, if there are projections of any type on this wall, the 5″ clearance should be taken from the projection, and not from the wall proper, to insure a clear space for the installation and operation of the counterweight system. No ducts, pipes, or other equipment should be hung on this wall. The counterweight equipment will occupy a depth of approximately 26″ from the wall on stage.

Use of Supporting Hangers

In Fig. 1 (Method #2) supporting hangers carrying part of the load of the gridiron and attached to roof beams overhead are shown. This is good construction, provided the roof beams are available to attachment of the hangers. In this type of construction the steel in the gridiron proper can be cut approximately in half, a factor of considerable importance in three ways: (1) approximately half of the cost of the steel may be saved; (2) the actual load imposed by the gridiron itself is cut in half, and there is less weight to support on the side walls and overhead trusses; and (3) the cost of erection will be considerably less. This possibility in stage construction is one that is not taken advantage of in proportion to its importance.

Head Clearance

The question often arises as to how much head clearance to allow above the gridiron. Obviously, there should be enough to permit a man to stand up straight, but, since the roof beams or trusses usually run on and off stage (across stage), it is satisfactory to base this clearance on the height from the gridiron floor to the top of the roof beams or trusses (underside of roof), while bearing in mind that it is desirable to cut the cost of construction at this point as much as possible.

Loading Platform

On any modern size stage a loading platform should be provided as per Fig. 4, and it should be figured to carry a load of approximately 100 lbs. per square foot. It is understood, of course, that only a part of the counterweights will be taken off and put on frequently, so the platform need not be figured to carry the entire counterweight load. The drawing shows a practical, inexpensive loading platform.

Problem of Accessibility

In the past it has been common practice to provide ladders up the side wall for accessibility to the gridiron. These ladders, usually 60′ to 80′ high, are very hard to climb, and for that reason no one ever visits the gridiron, unless he is compelled to do so. This disadvantage does not permit proper service of the operating equipment.

Occasionally the design of the building will permit breaking up this ladder height to simplify climbing greatly. In any event, the ladder method of reaching the gridiron is coming up for more consideration in the future because safety inspectors are offering serious objections to these long, open type ladders.

One of the best methods for obtaining ready access to the gridiron is a circular stair, which should be placed against the back wall and just in front of the loading platform. This not only provides a convenient means of access to the gridiron, but also meets the requirements of safety regulations. If the stairs are placed in the proper position, it is possible to operate sets in the same area without interference from the stairs. At

any rate, if a loading platform is used, it is good practice to discontinue the ladder or the stairs at the loading platform. A short ladder can then be placed on the loading platform leading up to the gridiron.

Underhang Type

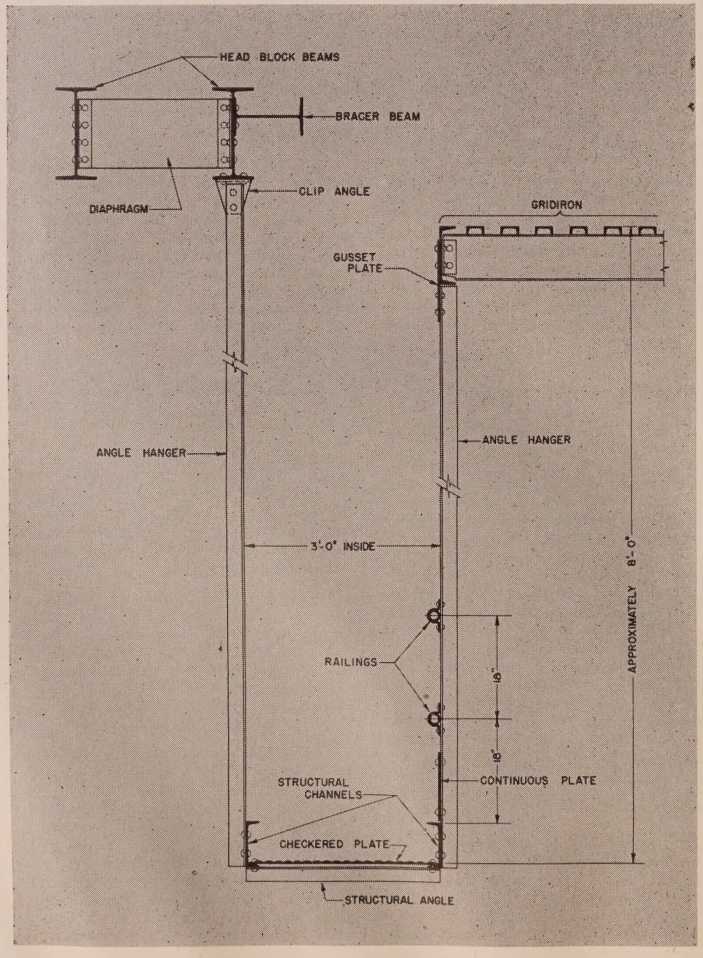
The preceding discussion has had to do entirely with the upright or conventional type of gridiron which should be provided for in any modern equipped house. There is, however, what is known as the *Underhang* type of gridiron, in which the stage equipment is attached to the under side of I-beams running up and down stage in approximately the same position as the wells and headblock beams on the upright type gridiron with the loads correspondingly distributed. There are cases where this is the only type of suspension practical, but the so-called *Underhang* type of gridiron is only make-shift at best and has many disadvantages.

First of all, the beams are figured to carry not only the static load of the stage equipment, but also the floor or roof above. It follows, therefore, that if the floor above becomes overloaded, or the roof carries an exceptionally heavy snow load, the load upon the beams is changed accordingly. These conditions are very difficult to anticipate. Occasionally these beams are supplemented with other beams to carry the roof load, but in most cases the other beams are lighter and, therefore, subject to greater deflection. Thus the bulk of the load, in turn, is transferred on to the stage equipment beams. If one also considers at the same time that considerable more stage equipment may be added than that which the architect originally figured on, an unsafe condition develops.

Secondly, once the underhang type of stage is rigged, it is extremely difficult to make any inspection or to do any maintenance work, since the stage proper is full of drapes, lights, etc., and there is no chance to get ladders up to the stage equipment. In building such a type of structure it should be remembered that a 40′ ladder is about the extreme height at which men can work. If the beams are higher than 40′, and in many cases they are, it is necessary to construct movable scaffolding called "boomerangs," and the cost of such scaffolding is very high. Thus, from a practical standpoint, it would seem that the underhang type of gridiron should never be used when it can be avoided, since it has no flexibility, makes maintenance and inspection next to impossible, and precludes the possibility of hanging additional sets or temporary lines that may be required from time to time.

During the past two or three years it has become quite common practice to erect this type of gridiron and then plaster over the beams. The installation cost really soars because the blocks all have to be specially built, and the plaster has to be chiseled away in order to get the clamps on the beams. Furthermore, the job, when completed, is not a good installation. It is difficult to say where this practice started, as it adds nothing to the strength of the structure; in fact, it adds an additional load. In the final analysis, there is no reason for plastering the ceiling of a stage house, and such practice should be discouraged.

FIGURE 4



VENTILATORS

While the ventilating system is not a part of the gridiron, it is, nevertheless, of considerable importance, and in many cases the designs of ventilators have not met requirements. The purpose of the ventilators in the roof is to carry off heat and gases generated by a fire on the stage and to prevent a pressure from building up sufficiently to interfere with the asbestos curtain descending to close the proscenium opening.

The area of the ventilators should be calculated in proportion to the size of the stage house and thus give ample release to these gases.

In many cases, fusible link systems operating the ventilators have been brought down only to the gridiron floor. This is not sufficient to give the type of protection necessary, and these fusible link systems should be brought down to within 6′ of the stage floor. If a fire were to start close to the stage floor, these links would let go and open the ventilators, whereas if all fusible links are above the gridiron, the fire would get quite a start before the ventilators opened up. This system of fusible links is, of course, entirely independent from the asbestos curtain fusible link system.

EDITOR'S NOTE

For added helpful data on Theatre Stages, the reader is directed to "Design and Furnishing of the Small Stage" on P. 229 of the 1945 Edition of THEATRE CATALOG, and to "Design and Equipment for Cinema Stages" on P. 237 of the 1946-47 Edition of THEATRE CATALOG. In both, the same author analyzes other relating facts gained from his long experience.

Hospital Theatre Caters to Comfort

Unique Seating Plan and Graduated Floor Provide Ample Leg Room and Clear View for Disabled Cases

BRIEF: ***Uncle Sam's hospitalized mariners at Great Lakes, Ill., don't mind the monotony of long "sick bay" sieges much now . . . The remodeled hospital theatre . . . reopened March 1 . . . incorporates a new and different seating arrangement which gives every patient room to stretch his crippled limbs . . . or to recline in his wheel chair . . . plus a sloping floor affording an unobstructed view of the screen . . . Films exercise their greatest force as morale builders . . . when exhibited in such an atmosphere of comfort . . . thought to have no known counterpart in hospital theatres.***

The recreational needs of hospitalized bluejackets are fully provided for from a comfort point of view at the U. S. Naval Hospital, Great Lakes, Ill. The hospital theatre, which is open only to patients and staff members, has been remodeled at a cost of $60,000 in non-appropriated hospital welfare funds to provide special seating arrangements for crutch and wheel chair patients. Infirm sailors no longer need to undergo the discomfiture of crowding their disabled limbs into the normal narrow space between rows of theatre seats because the last two rows of the main floor have three times the usual amount of leg room for crippled cases, while directly behind them special spaces are provided for wheel chair patients.

Construction and Furnishings

Before this unique remodeling was accomplished, movies and "live" entertainment were shown in a combination gymnasium and auditorium. The level floor did not afford a good view of the screen, particularly for stretcher cases and others in semi-reclining positions, from which an unobstructed and clear view of the screen was well nigh impossible. In addition to this drawback, acoustics and lighting facilities were way below par. Finally, since the entire audience, including disabled patients, was seated in uncomfortable and tightly spaced folding chairs, there was hardly ample room for the comfort of amputees and patients with leg casts.

The desperately needed remodeling job was undertaken in November, 1948, after sufficient funds had been allocated by the Hospital Welfare and Recreation Department, a unit supported entirely by profits from the hospital's Ship's Service Store. Erwin G. Frederick, Chicago theatre architect, drew up the plans for the theatre according to the specifications of Captain J. F. Hooker, Medical Officer in command of the hospital. A Chicago contracting firm, Benjamin Chemers Company, performed the construction under the supervision of Lt. John Nuckel, a member of the Navy Civil Engineering Corps and Hospital Public Works Officer.

The building, which also houses a library, Ship's Service, and chaplains' offices, is of simple frame construction. A short flight of steps leads up to the porch of the recreation building where the theatre is located, and three double entrance doors are located between the porch's pillars which support a small balcony above.

The carpet upon which the visitor treads immediately on entering the theatre is backed by a rubber rug pad to deaden sound. It and all other carpeting in the theatre was manufactured by Alexander Smith and Sons. The red, white, and blue theme of the interior is broken by acoustical drapes of green. The bulk of illumination is furnished by 40 overhead lights mounted flush in the ceiling.

Theatre chairs are red in color and were provided by the Ideal Seating Company. Curtain controls and tracks were supplied by Vallen, Inc. De Vry projectors and sound, Strong rectifiers and projection lamps, GoldE rewinders, Century spotlights, and Hub switchboard and dimmer motors highlight the projection booth equipment.

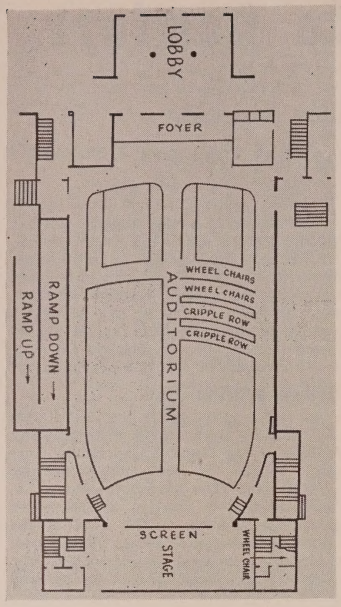
Due to its non-profit, military nature, the theatre charges an admission of only 12c with a different show featured every night in the week. Experience has shown that patients prefer domestic or musical comedies. Cartoons are a "must" because of their beneficial "laugh" value. Heavy drama and westerns are not generally included in program schedules.

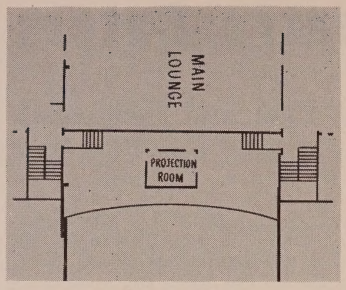
Unique Seating Plan

As was pointed out in the initial part of this article, the truly distinguishing feature of the Great Lakes Naval Hospital theatre is its unique seating arrangement. The semi-ambulatory patient's section is situated at the center of the main floor, at the head of the main entrance ramp. A total of 14 wheel chairs, 7 on each side of the center aisle, may be placed against a bumper secured to a sloping floor. The graduation of the floor permits patients a clear view of the stage. Since the center aisle leads directly to an exit ramp approximately 20 feet behind the last row of crutch patients, semi-ambulatory cases have ready access to escape in the event of fire.

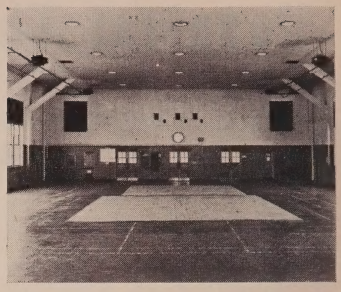
Adjustable stretchers, raised on wheels, may be placed in this section as well. A hospital attendant is seated in a regular theatre chair directly behind each wheel chair or stretcher.

A WORD FROM THE BOSS. Rear Admiral J. Carey Jones, USN, Commandant, Ninth Naval District, shakes hands with L. B. Shea, Boatswains Mate first class, a patient at Great Lakes Naval Hospital, at the dedication of their unique theatre recently remodeled for more than $60,000.00. *(U. S. Navy Photos)*





FLOOR PLANS of the first and second level show the nice proportions of the auditorium and the facilities for the movement and placement of handicapped patrons through the use of ramps.

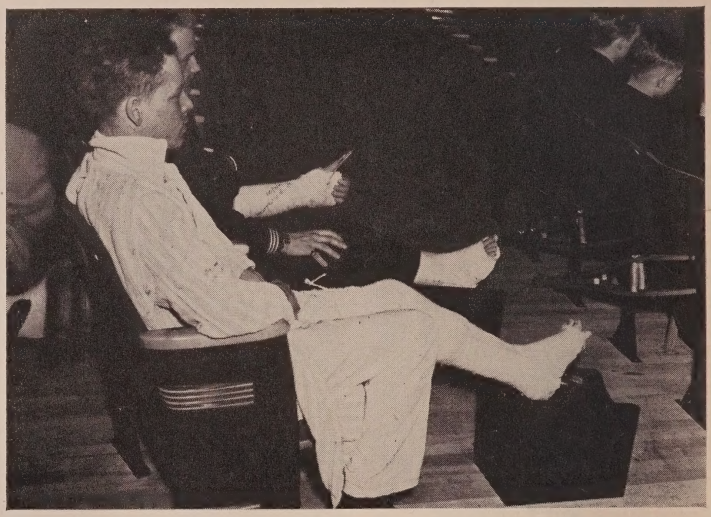


PRIOR TO REMODELING the area was an old combination auditorium-gymnasium using folding chairs and having the usual hazards and deficiencies of such rooms, as well as difficult sight-lines.

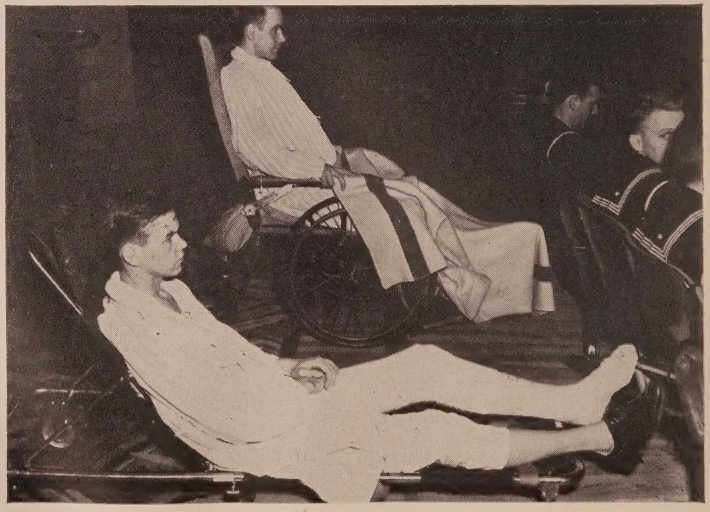
Aside from the provision for ample leg room, crutch patients in the two rows in front of the wheel chair section have movable foot rests at their disposition. During a performance patients' crutches may be stowed away on metal racks situated directly behind their seats. The racks are beveled to stand upright on the sloping floor.

Conclusion

As far as can be determined, the design of the Great Lakes theatre, which also contains dressing rooms and lighting facilities for "flesh" shows, is without parallel in hospital auditorium construction. Its 476 conventionally spaced main floor chairs and 117 balcony seats, although they give it a rather unusual capacity as far as hospital theatres go, would not make it unique in themselves if it were not for the addition of 14 wheel chair spaces and 54 specially staggered seats for crippled cases. Great Lakes hospital patients can now relax and enjoy movies and shows with no fear of cramps and discomfiture because of this adroitly planned auditorium layout.



CRUTCH PATIENTS SECTION (above) is provided with special footrests and metal racks on the chair backs on which crutches are stowed. The Wheel Chair and Stretcher Section (below) has floor bumpers to prevent chairs from rolling on the floor. This theatre is believed to be the first of its type in the U. S.

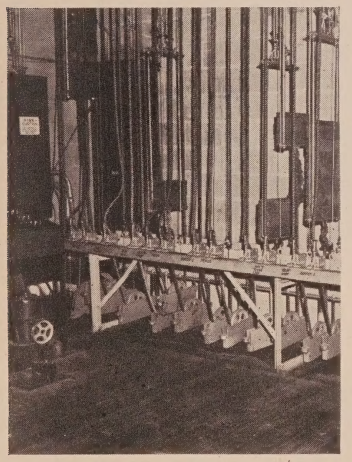


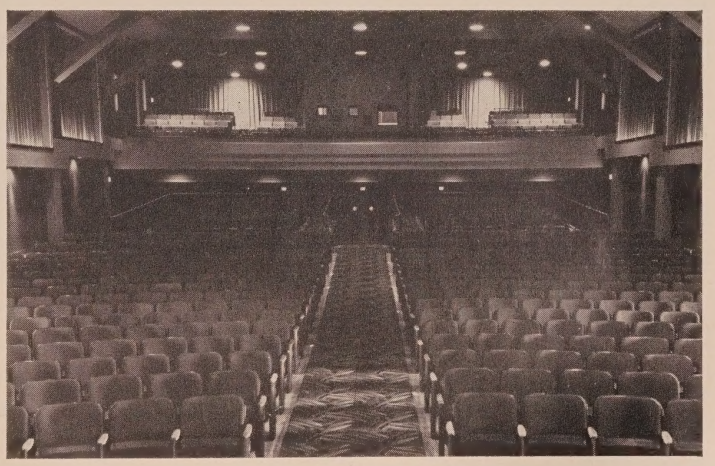
EXTERIOR AND ENTRANCE was unchanged, but the added ramps at sides and rear of auditorium made it unnecessary for invalids to climb stairs.

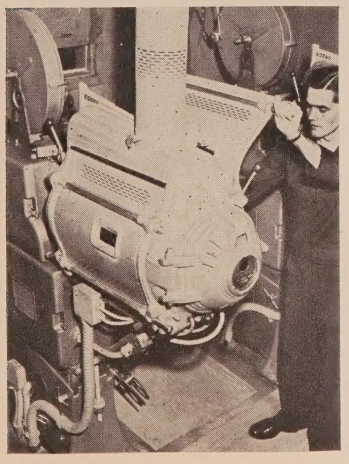
THE HOSPITAL THEATRE AS NOW REMODELED •

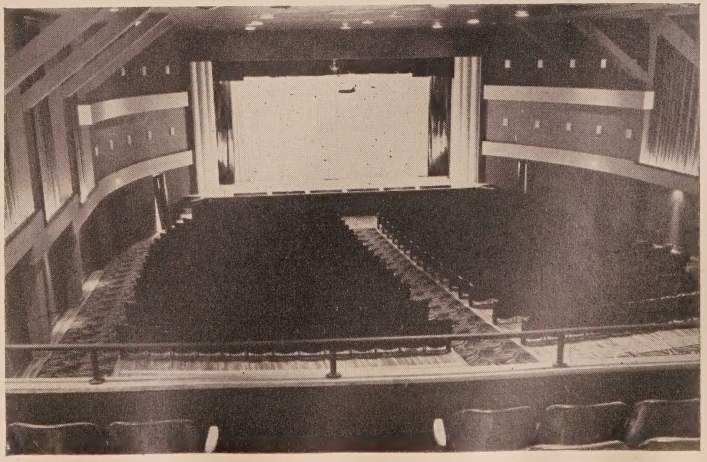
ABOVE: The inner lobby is smart and modern. BELOW: Curtain, scenery and lighting controls at the left stage. And the well equipped, tile floored projection room boasting of a pair of Strong Mogul lamps together with other quality products.

ABOVE: A hospital theme dominates the murals on the two walls of the foyer. BELOW: Good use has been made of a small stadium and a balcony in order to increase the seating capacity; and comfortably upholstered chairs and large figured carpeting carry out the theatre feeling. The decoration of the auditorium is simple but effective in its trim nautical approach, with the anchor above the stage opening setting the theme. Except for the provisions for the invalided and handicapped, this is a normal theatre.









A Modern All-Negro Theatre

Facilities of Highest Order Are Provided in Newly Opened New Orleans House for Colored Patrons Only

Although the colored population of the United States has been steadily increasing for the past few decades, there has been an unfortunate tendency in the entertainment world to overlook the importance of this rapidly growing minority. The theatre industry, for example, has until recently failed to recognize the prominent position of this group from a potential patronage viewpoint.

Due to their steadily improving economic situation, the country's Negroes now have more entertainment dollars to spend than ever before in their social history, and it is incumbent upon theatremen to make a more concentrated effort to attract a greater portion of these amusement funds. They can do so by convincing the Negro that his patronage is as welcome as anyone else's and by seeing to it that houses in colored neighborhoods are just as finely appointed as other surrounding modern houses. The Negro patron, too, is entitled to as much for the ticket he buys.

BRIEF: ***Due to the splendid economic progress . . . which it has achieved during the past generation . . . the average colored family is now in a better position to seek entertainment outside the home . . . The moviegoing impulses of many negro patrons have . . . however . . . been somewhat stifled by the fact that there has been either a dearth of theatres in their neighborhoods . . . or only shabby and ill-kempt structures with poor pictures.***

The Carver in New Orleans . . . opened last fall . . . appears to recognize fully the Negro's growing feeling that his admission dollar should command theatre facilities comparable to those found elsewhere . . . Described in the following article are the physical assets of this unique playhouse . . . features which assure it enduring support by the important element which it serves.

THE CARVER, NEW ORLEANS

In a noteworthy and commendable effort to build up a loyal and sizeable patronage in one of the heavily colored sections of New Orleans, the de luxe 1,050-seat Carver was opened at 2101 Orleans Street on September 29, 1950, by Jack A. Dicharry and Mrs. Henry Lazarus. The former is a pioneer theatre operator in the city with approximately 25 years of local experience, while the latter is owner of the Henry Lazarus Theatres chain in New Orleans and three Bryan, Tex., houses. The Dicharry-Lazarus partnership, which presently functions under the name Jadel Theatres, Inc., was originally formed in 1937, when the two joined forces to build the Circle in New Orleans.

Exterior Construction

Named in honor of the famed negro educator and scientist, George Washington Carver, the house was designed by Architect Jack Corgan of Dallas and features a fireproof construction of steel, brick, and concrete blocks. The building was erected on a lot approximately 78' by 155' and provides ample office space in addition to the exhibition facilities.

The front combines both light and dark brick facings with two-tone buff above and oatmeal color tile with maroon trim below. An "island" type boxoffice faces directly toward the street, while a lofty sign tower with the theatre name inscribed in neon rises above a two-faced marquee that employs Adler 10-inch letters to spell out feature attractions.

Lobby and Foyer

A visitor entering the Carver can readily perceive how nearly $300,000 was spent to construct and equip the building, for there is a note of luxurious elegance wherever one looks. Rich coral and black Mohawk carpeting covers the floors, while the walls are tastefully done in coral and lime yellow with dark green and gray trim. Directly off the foyer are located the rest rooms with the ladies' finished in yellow and green and the men's in green tile with a black border. Marble partitions are to be found in each, and a maid is always in attendance in the powder room.

A particular highlight of the foyer is the large well-equipped refreshment stand of stainless steel with a beautifully etched aluminum front. The stand has been laid out so that sales may be made to passersby on the street outside as well as to patrons in the theatre.

Auditorium

The comfortably air-conditioned interior has 1,050 Griggs chairs on one floor only. The color scheme consists of a light buff tone on the plaster ceiling, a pale green on the walls, light buff pilasters, and a dark green wainscot. Heavy velvet draperies flank a simple proscenium in which is set a Williams tearproof screen. Recessed lighting fixtures provide illumination.

In the compact projection booth above are two Simplex projectors with RCA sound supplied by Southeastern Theatre Equipment Company. Every safety precaution is taken in the booth to insure trouble-free operation.

Operating Policies

The Carver serves the entertainment needs of a colored drawing area with a total population of approximately 75,000, many of whom are inhabitants of an all-negro government housing project located directly across from the theatre. The majority of patrons are working and laboring class people who prefer action and western pictures.

A "bargain" matinee is run daily from four until six p.m., except on Sundays when the doors open at one p.m. Regular prices, of course, apply after six p.m.

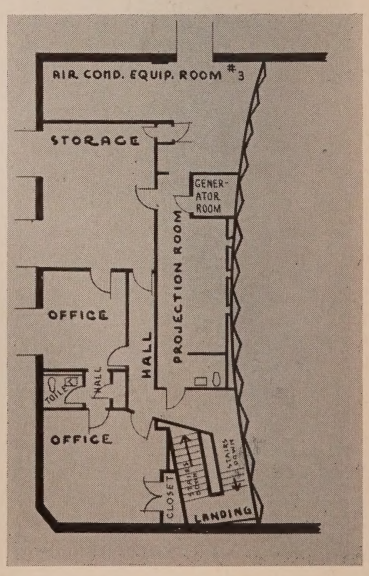
Here is a theatre worthy to grace a main stem or modern shopping center anywhere; and its local popularity is well merited.

CONCLUSION

A marked degree of success has attended the Carver ever since its opening to attest to the fact that first-class theatres, built exclusively for colored patrons, may well provide a rich source of income in other sections of the country where a heavy negro populace exists.

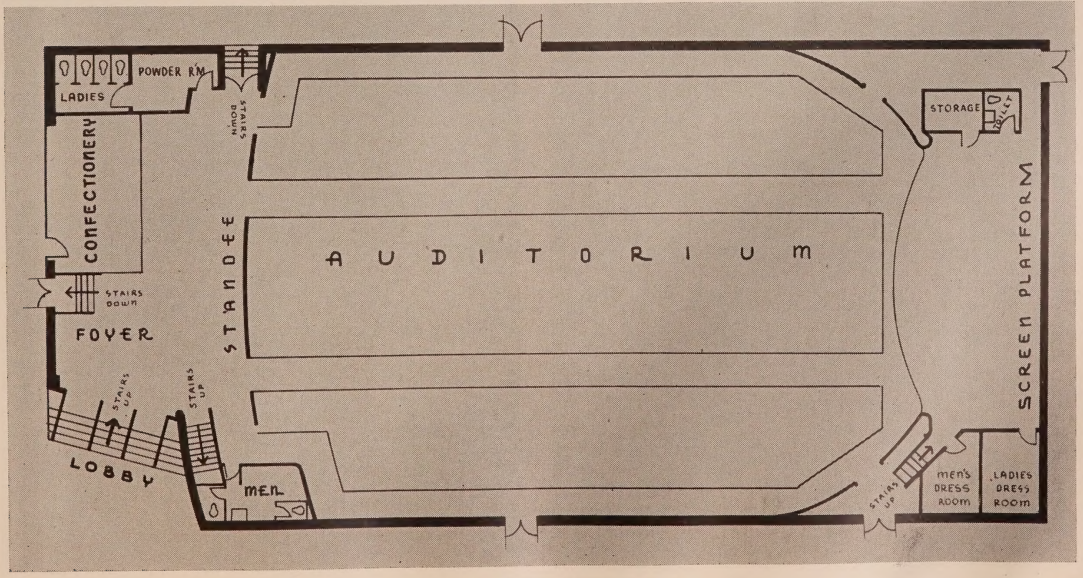
It is reported that patrons at the Carver are genuinely appreciative of the excellent facilities which have been provided for their pleasure and convenience. They are extremely proud of the fact that their own theatre matches any other in the city as far as appointments go, and have thus far exhibited their enthusiasm in wholehearted support of the house on a satisfactorily profitable basis. There is every reason to believe that other colored groups throughout the nation would lend equally strong backing to similar theatres catering exclusively to their race.

SECOND LEVEL PLAN shows the placement of the projection, generator, storage, air conditioning equipment, manager's office, and other service rooms well removed from the patron traffic flow.

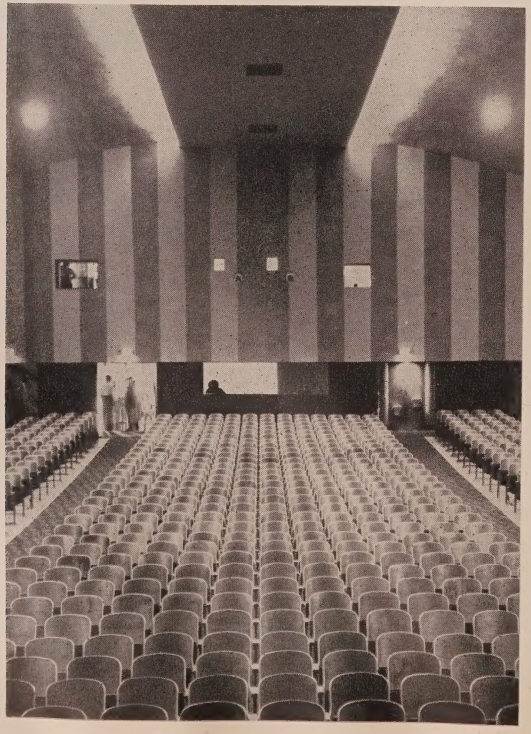


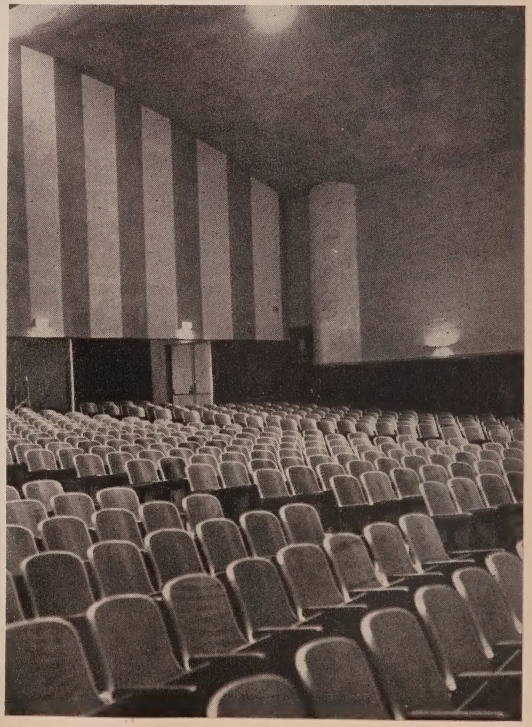
FIRST LEVEL PLAN (below) shows the simplicity and the directness of the crowd controls. Taking full advantage of corner location for boxoffice and lobby, the foyer provides access to a large lobby shop that also serves passersby through its street entrance. There are dressing rooms for staff.

THE EXTERIOR (above) combines several shades of buff face brick, common brick and glazed tile laid in interesting panels and sections. The entrance steps are unfortunate but were necessary to gain elevation in a low area. Location of the extra profits lobby shop is an interesting feature.



INTERIOR FEATURES are: (above, left) Its smartly modern and well equipped lobby shop. (above, right) Upholstered seats facing a richly simple velour draped proscenium and topped by a hung central ceiling cove containing the indirect lighting and air ducts. (below, left) The rockwool insulation and velour covered rear wall with glass sectioned barrier separating standee area. (below, right) The curved columns form side wall panels.



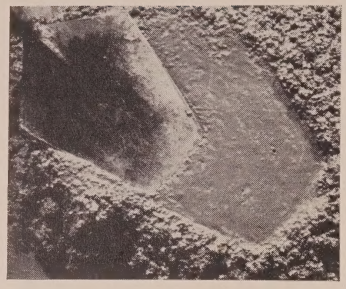


CONSTRUCTION and MATERIALS

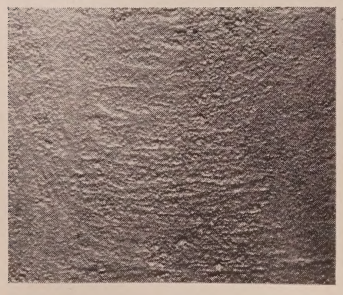
1950-51

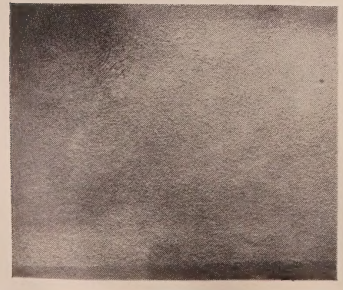
A Detailed Study of Concrete Floors

The Basic Ideal Type of Surface for Theatres and Its Kin, Such as Terrazzo, Are Treated at Length



THE CORRECT PROCEDURE in the construction of concrete floor finishes begins (above) with: 1. accurate proportions of ingredients; 2. roughening of base slab. BELOW: 3. manipulation of surface for durability; 4. delayed troweling.





Due to the many reasons of fire safety, maintenance economy, accident prevention, wearing capacity under heavy traffic, and sanitation, all floor surfaces in motion picture theatres from the sidewalk through the lobby, foyer, auditorium, stairways, balcony, lounges, and toilet rooms, must need be either concrete terrazzo, or some other monolithic hard substance. While it is true that traffic areas inside of the theatre, such as foyers and aisles, must be heavily carpeted to reduce traffic noises, the largest areas of the interior remain uncovered and, therefore, present many rather unusual construction and maintenance problems.

BRIEF: ***Although the informative surveys to date in the preceding annual volumes of THEATRE CATALOG have covered hundreds of subjects . . . of either continuing or permanent merit . . . hard floor surfaces have never been thoroughly analysed . . . nor have recommendations been made for their original installation . . . or later care and maintenance . . . Naturally, references have been made to them as they affected structure, sight lines, or the installation of equipment . . . but that is about all.***

In order to add a thorough review of this important topic to the vast fund of knowledge . . . on all subjects pertinent to the physical aspects of the theatre . . . already contained in its pages, the Editors of THEATRE CATALOG have undertaken an exhaustive survey of concrete . . . and related types . . . of floors for motion picture houses . . . A minutely detailed analysis has been made of such matters as: construction of the base slab . . . finishing procedures . . . decorative concrete floors . . . covered floors . . . and maintenance.

First and foremost among the various types of floors available for theatre use stands the ordinary concrete one with its many advantages ranging from moderate first cost to low insurance rates. A properly built reinforced concrete floor will last indefinitely and require little maintenance. Since, in the final analysis, other species of floors suitable for theatre installation, such as terrazzo, are actually offshoots of the basic concrete type, it is important that the theatreman fully understand the correct procedures for constructing, installing, finishing, and maintaining a concrete floor that may reasonably be expected to yield years of faithful service. While other types of floors will be briefly touched upon, the basic concrete one will be the focal point of discussion throughout this survey with particular attention to its application to theatre floors either by itself or in combination with other floor finishes.

CONSTRUCTION OF THE BASE

Where floors are subject to constant wear and require frequent cleaning, as in theatres, the two-course floor, which consists of a structural base slab and a wearing course ¾″ to 1″ thick placed over it, is recommended (on auditorium floors, however, a wearing course 2″ thick must be used to accommodate standard 1¼″ anchor bolts for chairs). Inasmuch as the former is the basic surface on which the latter is imposed, it seems advisable to analyse it thoroughly first of all before proceeding to a discussion of wearing courses, or "finishes," as they are more generally called. An examination of the base logically begins with a definition of concrete and the conditions required for the durability essential in the construction of floors.

Definition of Concrete

Concrete is a mass of fine and coarse materials, known as "aggregates," which are surrounded and held together by hardened portland cement paste. If the paste is strong and the aggregates durable, the concrete is strong. If the paste is watertight, the concrete is watertight. If the paste and aggregates are durable, the concrete is durable.

When the materials for concrete are first mixed together, the cement and water form a paste. The paste surrounds the particles of aggregate and holds them together to form concrete. This concrete is in a plastic condition. A chemical action then takes place between the cement and water causing the paste to harden.

If strong concrete is desired, the paste must have high strength when hardened. During mixing, if too much water is added, the paste becomes thin or diluted and will be weak when it hardens. A paste of this kind will not hold the particles of aggregate firmly together. When the paste is weak the concrete will be weak because the pieces of aggregate will be only partially held together. On the other hand, cement paste which has good binding qualities will hold the particles of aggregate firmly together to make strong concrete. Therefore, the water and cement are the important ingredients in a concrete mixture.

It is known that the quality of the portland cement paste used determines how strong, how watertight, and how durable hardened concrete will be. The quality of this paste is determined by the quantity of water mixed with the cement, and this is the main reason why concrete is now proportioned according to the amount of water to be mixed with each sack of cement.

Selection of Materials

Choosing suitable materials is the first step in making concrete that is to be

strong, durable, and watertight. The qualities of portland cement, mixing water, and aggregates which make them suitable for use in a concrete mixture are listed here.

Portland Cement—Although there are five types of portland cement, the one used for general concrete construction is usually entirely suitable for theatre floor construction purposes where no unusual atmospheric or other conditions exist.

It is of prime importance that cement be kept dry at all times prior to use. Cement which contains lumps that cannot be readily pulverized by striking lightly with a shovel should not be used; however, cement that is caked due to the weight of cement piled on it can be reconditioned by rolling the sack on the floor.

Mixing Water—In general, water that is fit to drink is suitable for mixing with cement. Water that is clean and free from, oil, alkali, or acid is most desirable.

Aggregates — Aggregates usually are divided into fine and coarse, sand being the most common form of fine aggregate, and pebbles, crushed stone or crushed slag, the most common form of coarse aggregate. Sand or other fine aggregate, such as stone screenings, includes all particles from very fine (exclusive of dust) up to those which will just pass through a screen having meshes ¼-inch square. Coarse aggregate includes pebbles, crushed stone or crushed slag ranging from ¼ to 1½ inches or larger.

The largest size of coarse aggregate to use is governed by the nature of the work. For example, aggregate up to 1½ inches or more in size may be used in a thick foundation wall or heavy footing. In thin slabs or walls it is recommended that the largest pieces of aggregate should never exceed one-third the thickness of the concrete being placed.

Aggregates which are sound, hard and durable are best suited for use in concrete. Aggregates which are soft, flaky and which will wear away rapidly through exposure to weather, generally are unsatisfactory.

In addition to being sound, hard and durable, the best aggregates are clean and free from fine dust, loam, clay or vegetable matter. These materials are objectionable because they prevent the cement paste from binding together the particles of sound, durable aggregates, thereby reducing the strength of the concrete and making it more porous. Concrete made with dirty aggregates hardens slowly and may never harden enough to serve its intended purpose.

In general, the best aggregate available in the area will be the most satisfactory. Aggregates obtained from established plants with adequate washing and screening facilities ordinarily will insure uniformity in grading, cleanliness and quality.

Well-graded fine aggregate, in which the particles are not all fine or all coarse but vary from fine up to those particles which will just pass a screen having meshes ¼-inch square, is recommended. If the sand is well graded, the finer particles help to fill the spaces (voids) between the larger particles, thus resulting in the most economical use of cement paste in filling the voids and binding the aggregate particles together to form strong concrete.

Coarse aggregate is well graded when the particles range from ¼-inch up to the largest size which may be used on the kind of work to be done.

The natural mixture of fine and coarse aggregates as taken from a gravel bank or crusher seldom is suitable for concrete unless first screened to separate the fine material from the coarse and then recombined in the correct proportion for the class of concrete being made. Most gravel banks contain either more sand or more coarse material than is desirable for best results. Usually, bank-run material contains too much sand.

Proportioning

It is an easy matter to proportion concrete by methods which control the total amount of water that is mixed with each sack of cement and thus control the quality of the concrete. The first thing to do is to determine the quality of cement paste required for the particular job.

Concrete that places and finishes readily is known as workable concrete. In a workable mixture there is sufficient cement paste to bind the pieces of aggregate together so they will not separate when the material is transported to or placed in the forms. There also is sufficient cement paste and sand to give good, smooth surfaces free from rough spots, called "honeycombing." In other words, there is just enough cement paste to fill completely the spaces between the particles of aggregate and to insure a smooth, plastic mix that finishes easily.

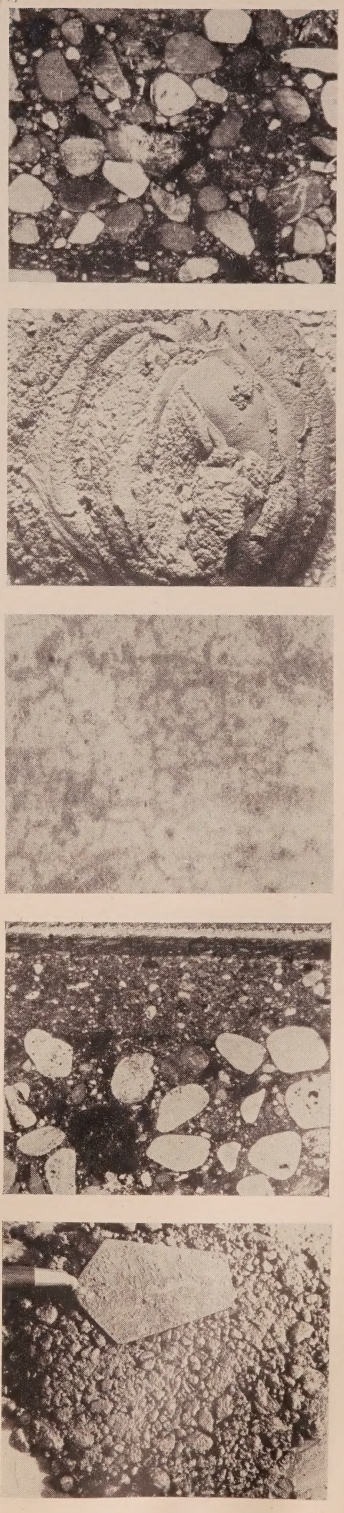
A mixture that is workable for one job, however, may be too stiff for another—that is, concrete to be placed in thin sections must be more plastic than if used in heavier work. However, it is best to avoid very mushy, sloppy mixtures at all times because they separate in handling, with the larger pieces of aggregate sinking in the mass. This kind of concrete will be of poor quality, and may also be very uneconomical.

Mixing

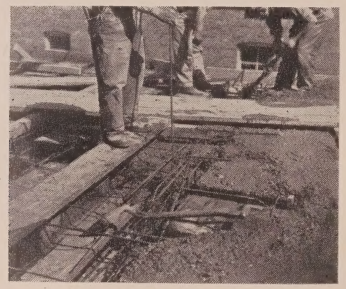
Accurate measurement of all materials, including water, is necessary to insure production of uniform batches of concrete of the quality desired.

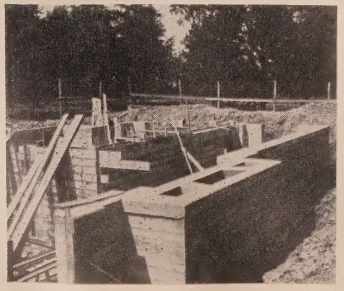
The best way to make sure that all batches will be uniform, is to use weighing or measuring equipment that is designed to give accurate measurements at all times.

Measuring Aggregates — When measuring is done with shovels, each man in the mixing crew should be required to check the number of shovelsful he takes in handling exactly 1 cubic foot of material. This is done by counting the number of shovelsful of each material required to fill a cubic foot box or a cement sack which holds 1 cubic foot. This test should be made at least once each day, particularly if new loads of material are delivered on the job.



PICTORIAL REVIEW of do's and don'ts in construction of concrete floor finishes continues with: 1. uniform distribution of coarse aggregate particles; 2. avoid weak cement and sand mortar toppings; 3. crazing frequently results; 4. a poor distribution of aggregates; 5. a poor mixture with insufficient filler for spaces.





If measuring is done with wheelbarrows, each barrow should be marked on the inside for 1 cubic foot, 2 cubic feet, etc. This marking can be done by dumping a cubic-foot box or a cement sack full of material in the barrow, leveling and making a mark at that level. This can be repeated with another cubic foot of material, etc., until the barrow is calibrated.

The most accurate method of measuring aggregates is by weight. On large or small jobs, many contractors are using platform scales with short runways on either side of the platform. The filled wheelbarrows are run up on the platform and a few shovelsful are added or removed to adjust the weight. This method has many advantages over measurement by volume. Not only is it more nearly accurate, producing better uniformity from batch to batch, but also it is easily adjusted for necessary changes in proportions and completely eliminates the problem of correcting for bulking of sand.

Measuring Water—In using the modern method of proportioning—that of adding a definite amount of water to each sack of cement—it is necessary to maintain accurate measurement of mixing water throughout the duration of the job.

Many concrete mixers are now equipped with tanks and measuring devices which give satisfactory results when properly used. These measuring devices can be set to deliver any number of gallons of water in the mixer drum as specified for the work at hand.

It is necessary to check water measuring devices regularly and to see that valves are tight in order to insure accurate measurement of water.

An ordinary 12-quart galvanized pail, marked off in gallons, one-half gallons and one-quarter gallons, is used for measuring water when mixers are not equipped with measuring devices. Recommended practice is to measure water from a barrel using a pail kept at the mixer for this purpose—that is, the measuring pail should not be used for other purposes.

Time of Mixing—With a batch-type machine mixer, it is recommended that mixing continue for at least one minute after all materials, including water, are placed in the mixer drum. When every piece of aggregate is completely coated with cement paste, the concrete is well mixed. More uniform concrete also is obtained from thorough mixing.

Improved Workability—Thorough mixing also gives improved workability which reduces the labor required in placing and permits the use of slightly larger quantities of aggregate with a given proportion of cement and water. Contractors find that another advantage of thorough mixing (for at least one minute and preferably two) is that it assists in securing watertight concrete.

Small changes in the speed of the mixer have little, if any, effect because thoroughness of mixing is governed largely by the time of mixing and not the rate of rotation of the mixer drum. Loading the mixer above its rated capacity is not recommended as such overloading prevents thorough mixing. If increased output is needed, it is best obtained by using a larger mixer or additional mixers instead of speeding up or overloading the mixing equipment on hand.

Thorough mixing is economical because the concrete is easy to place. Inspection of well-mixed concrete shows that all particles of aggregate, including sand, are coated with cement paste.

DEPICTED AT SIDE ARE: 1. a concrete mixture which contains correct amount of cement-sand mortar; 2. a mixture with excess of same; 3. reinforcement is entirely embedded by rodding concrete; 4. runways built around forms enable placement of concrete where needed; 5. formwork left in place on interior wall assists curing.

Placing

Methods used to move concrete from the mixer to the forms will depend largely upon the job conditions. On small jobs wheelbarrows are the usual means of transportation. On the larger jobs, buggies and chutes are commonly used.

When using barrows or buggies, care is required to prevent segregation (pieces of coarse aggregate separating out) as the concrete is being moved. Segregation is likely to occur when the concrete is handled over rough ground or runways. A rather stiff consistency usually is required to prevent segregation.

When chuting equipment is used, special care should be used to prevent segregation. It is recommended that a slope not flatter than 1 to 3 or steeper than 1 to 2 be use. When long chutes are required, it is best to deliver the concrete into a hopper before it is placed in the forms. In such a hopper the concrete is remixed to a certain extent and any pieces which may have separated out are recombined into the mass. When chutes are flushed with water in cleaning, care is taken that this water does not enter the forms.

Concrete is deposited in level layers, usually not more than 8" deep. As it is placed it is tamped and spaded just enough to settle it thoroughly and produce a dense mass. Working the concrete next to the forms insures an even, dense surface.

If the mixture becomes sloppy as the forms are filled due to water being forced out of the lower layers of concrete, this can be regulated by using stiffer mixtures.

At the end of a day's run or where the work has to stop long enough for the concrete to begin hardening, the top surface is roughened just before it hardens, so as to remove laitance or scum and provide a good bonding surface for the next layer of concrete. Just before resuming concreting, the roughened surface is cleaned, thoroughly wetted with water and then brushed with a cement-water paste of a thick, creamy consistency. This paste is applied in a thin brush coat just a few feet ahead of the concreting operation so that it does not have a chance to dry.

Unless care is used in providing a bond between different layers of concrete, there is danger of seams developing that will cause leakage. This precaution to get a good bond between different layers of concrete is very important wherever the concrete construction is to be watertight. It is also important in securing good bond between the two layers of concrete in two-course floor construction.

Halting Segregation in Forms—It is just as important to prevent segregation in the forms as it is when transporting the concrete from the mixer to the forms. It is good practice to deposit concrete in the forms where it is to be used rather than to place it at a few points and drag it or cause it to flow where needed. Depositing the concrete uniformly around the forms prevents segregation and honeycombing.

With thoroughly mixed concrete delivered at proper consistency and without segregation, placing of concrete is made easy; but even in this case further care is required to see that the material flows properly into the corners and angles of forms and, in reinforced work, around the reinforcement.

Placing by Vibration—Vibration has many advantages as a means for placing concrete. The modern high-frequency concrete vibrators make it possible to place mixtures economically, which are impracticable to place by hand methods. For example, concrete of a stiff consistency can be readily placed by vibration in forms containing closely spaced reinforcements, which with hand-placing would require a medium consistency.

Concrete of a better quality can be made with the same amount of cement because less mixing water is required for the stiff mixes. On the other hand, concrete of the same quality is produced more economically because more aggregate can be used. Vibration not only permits the use of stiffer mixes but also permits using a smaller proportion of sand to coarse aggregate, both reducing the amount of mixing water.

For concrete mixes having consistencies that can be readily placed by the usual hand methods, there is generally little advantage in vibration, as segregation may occur. Only when using mixes which are stiffer and harsher than required for hand-placing will the full benefits of vibration be realized. With vibration more rapid placing is often possible, and the concrete also can be placed into locations where it is impracticable to spade or rod by hand methods. Earlier finishing of surfaces and removal of the forms at shorter periods are other advantages which are sometimes obtained.

Reinforcing

Reinforcement is the term used to describe the steel bars or small or large mesh metal reinforcement placed in concrete to increase its tensile strength. Concrete is a material which is very strong in compression—that is, very strong in bearing loads that are placed directly upon it, but it requires steel bars or other metal reinforcement in some structures to increase its power to resist stresses or forces that tend to bend or pull it apart such as the heavy foot traffic in a theatre.

On most work done by concrete contractors, sizes, location, and spacing of reinforcement usually are determined in advance by experienced engineers, blueprints showing details of construction being furnished. Where it is necessary for the contractor to determine the sizes and spacing of reinforcement, it is recommended that he consult an engineer experienced in reinforced concrete design.

Specifications — Most specifications require that reinforcement shall be free from rust, scale, or other coatings that will reduce the bond between the concrete and the steel. It is necessary to clean bars or metal reinforcement which do not meet this requirement. Bending or straightening reinforcement in a manner that will injure the material is to be guarded against. Heating of reinforcement likewise is not permitted. No. 18 annealed wire usually is used to tie reinforcement together where lapping and intersections occur.

Construction Details—General specifications require that reinforcement shall be accurately placed and secured, and shall be supported by concrete or metal chairs or spacers or metal hangers. Ordinarily, reinforcement is placed after all form work is built.

In general, it is recommended that all reinforcement be protected by at least a ¾-inch covering of concrete. A thicker covering is generally required in that part of the structure exposed to the weather or to the ground. In placing concrete, it is desirable to work the material around and under all reinforcement and embedded fixtures, working the concrete with suitable tools.

Where conditions make spading difficult, or where reinforcement is closely spaced, batches of mortar containing the same proportion of cement to sand used in the concrete are first deposited in such locations. Then filling with the specified mix is carried on in such a manner that the concrete is plastic and flows readily, with light tamping, around the reinforcement. Tapping the form with a rubber or wood mallet or any similar practical method may be used to make the concrete settle around and under reinforcement.

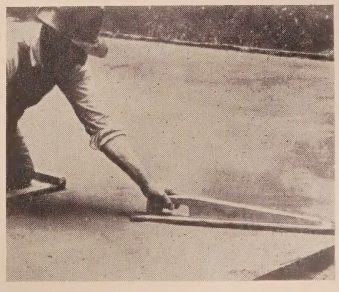
FINISHING PROCEDURES

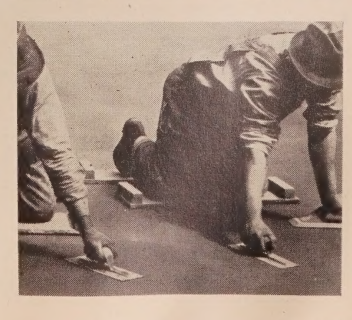
Since the top surfaces, or finishes, of concrete floors take the actual wear and grind, they deserve all the attention possible during construction. If they are properly laid out, concrete floors will resist extremely severe conditions indefinately and "dusting"—that most troublesome of floor diseases—will be avoided. Due to the thinness of a floor finish and the nature of its service, it is particularly important that certain basic principles be followed in its construction, since, for example, a different manipulation or working of the concrete into place is used in making a floor finish than in the structural base slab.

Fundamental Requirements

Concrete can be made to have a wide range of qualities. Thus, the strength, resistance to wear, watertightness and other characteristics may be varied by changes in the materials or the proportions of the ingredients used and by differences in the manipulation of the concrete.

The quality of the materials affects the quality of the concrete. Portland cement





ILLUSTRATED HERE ARE: 1. roughening base with a stiff wire broom to insure bond; 2. screeding concrete to proper level with steel-edged screed; 3. a mechanical float evens out the finish; 4. this may also be done with a long hand float; 5. short floats may also be used to even out the surface with troweling following.

is made to meet standard specifications. It should be protected from moisture while in storage to prevent deterioration. Water used for mixing should be clean. Clean, hard, tough, suitably graded aggregates give more wear-resistant concrete than materials which are inferior in these respects.

The less water used in mixing concrete, the stronger, more wear-resistant and more watertight it will be, provided the concrete can be placed properly.

For uniform concrete, a mixture that does not permit segregation of the ingredients must be used. The proportions of the various sizes of aggregate and aggregate to cement and water should therefore be such as to prevent their separation during handling and placing.

The chemical combination of cement and water to produce hard, strong concrete requires time. During this time moisture must be available, either by preventing evaporation of the water used in mixing or by replacing that which does evaporate.

Applying these basic principles to concrete floor finishes, the following requirements should be observed:

1. Use only suitable materials.
2. Use not more than 4½ to 5 gal. of mixing water per sack of cement. This includes water introduced as surface moisture on the aggregates.
3. Use mixtures and construction methods which will not permit segregation resulting in free water and fine material on the top surface.
4. Prevent early evaporation of water by keeping the concrete wet as long as practicable.

The aggregates constitute such a large proportion of the concrete volume and have so much influence in producing wear-resistance that they are of first importance.

Aggregates for Floor Finish — Since the aggregates in the wearing course are subject to abrasion, they should be of sufficient toughness and hardness to resist that abrasion. Where conditions are severe, traprock of a dense, fine-grained and interlocking crystalline structure or hard, fine-grained granites and quartzites are excellent. Where the duty imposed is not so severe, such as floors of a decorative nature, aggregates of less hardness may be selected.

Aggregates may be either gravel or crushed stone. Materials containing a large proportion of elongated or thin fragments should never be used. All aggregates should be clean, free from dust or highly weathered fragments and should consist of particles which will not alter in physical or chemical nature in the presence of moisture. New and untried aggregates should be subjected to study before they are used in finishes intended for long service under severe conditions.

The economy of properly proportioned and correctly constructed concrete floors is lost if weak mortar toppings are used. In a correctly built concrete theatre floor, tough, hard, durable aggregates are firmly held in a portland cement paste of high strength. These aggregate particles are at and near the surface of the floor, and are the wear-resistant constituent of the concrete. Since the aggregates perform this important duty and represent about three-fourths of the mass of the hardened concrete, the necessity for proper quality can be readily appreciated.

Cement and sand mortar toppings should never be used for heavy-duty floors such as those in theatres, and, for that matter, should be avoided even for light traffic. There are no large particles of durable aggregate in a weak mortar topping to resist wear. Mortar toppings also shrink more, and thus are more apt to crack or craze. Since it is made of fine material only, a mortar topping works easily and a very smooth finish can be produced. For this reason, it has been all too commonly used without thought as to its performance.

Mixes for Floor Finish—The amount of mixing water should not exceed 4½ to 5 gal. per 94-lb. sack of cement. The amount of surface moisture in the aggregates should be carefully determined and this amount subtracted from that specified. The exact proportions of the aggregates will vary somewhat with their gradings and are best determined by trial.

Job experience and tests have proved that the wearing quality of a concrete floor is to a great degree influenced by the proportions of cement, sand, and coarse aggregate, plus the proper amount of clean mixing water. A concrete floor finish made with a large percentage of sand as compared with the quantity of coarse aggregate will not be durable.

The most satisfactory mixture for durability is one made of 1 part cement, 1 part sand, and 2 parts of coarse aggregate. The coarse aggregate should be graded from ⅛ to ⅜ in.

Workability of Concrete — Concrete should be of such proportions and have such workability that it can be compacted and each aggregate particle becomes completely surrounded by cement-water paste, leaving no honeycomb nor voids. Floor topping is laid in a relatively thin layer and is compacted by tamping, rolling, floating, and troweling. Therefore, a stiff mixture can be used. Stiff mixtures are advantageous, as they permit less mixing water and more aggregate with a given amount of cement and prevent segregation of the materials. Such concrete is best mixed in the open top paddle type mixer.

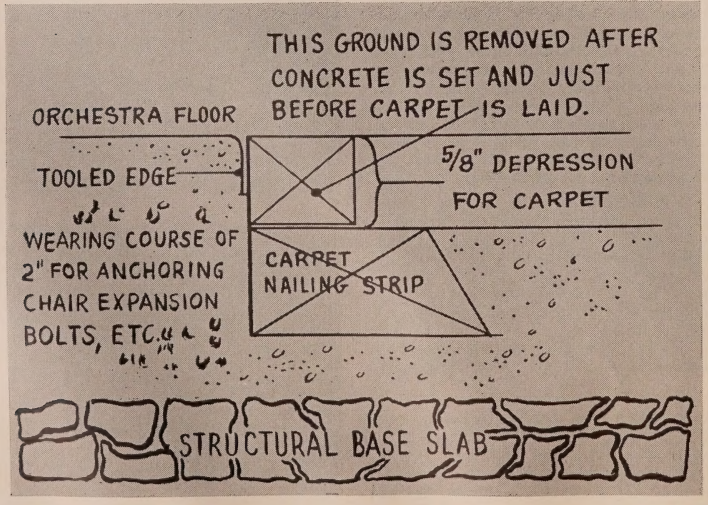
It is desirable to have as much as possible of the coarse aggregate near the surface of the floor to take the abrasion and wear of service. An excess of fine aggregate should, therefore, be avoided as it tends to work to the surface during compaction, thus defeating the purpose of the coarse material. On the other hand, the mix should not be too harsh for the methods of construction used. Harshness should be corrected by adjustment of the proportions of fine and coarse aggregate and the total amount of aggregate. The specified amount of mixing water should not be increased to produce workability.

Thickness of Finish — The wearing finish of concrete floors should be not less than 1 in. thick, whether it is placed at the same time as the structural slab or after the concrete in the structural slab has hardened. The thickness of structural slab will, of course, depend on design requirements. As pointed out previously, the finish on auditorium floors must be at least 2″ thick to provide for 1¼″ chair anchor bolts.

When floors are placed over a membrane waterproofing or over insulation, a reinforced slab at least 3 in. thick should be placed over the membrane or insulation. The top 1 in. may constitute the wearing finish.

Importance of Curing—The chemical reactions between cement and water which cause it to harden continue indefinitely if moisture is present and

THE SPECIAL PROBLEMS OF AUDITORIUM FLOORS are considered in the accompanying diagram. Once the structural base slab has been properly leveled and compacted, the aisles should be located and the carpet strips and grounds installed to proper floor slope. Latter provide screeds for floor and aisle and protection of carpet depression edge until curing. Note wearing course to accommodate chair bolts.



temperature is favorable. Through this curing process, the internal structure of the concrete is built up to provide strength, resistance to wear and watertightness. Floor finishes present such a large surface area that loss of moisture through evaporation takes place rapidly unless measures are taken to prevent such evaporation. Rapid drying not only stops the chemical reactions, but may cause dusting and also cracking of the surface due to shrinkage taking place at a time when the concrete has little strength.

To prevent drying out, water for curing should be applied to the new concrete as soon as this can be done without marring the surface. It should then be kept wet with sand or burlap or the moisture should be sealed in by covering the floor with waterproof paper or a membrane curing compound. The longer this curing period can be extended, the stronger, harder and more impervious will be the concrete. The curing period should run one or two weeks at least. Special attention should be given areas near radiators or other sources of heat, to prevent evaporation during the curing period.

Construction Methods

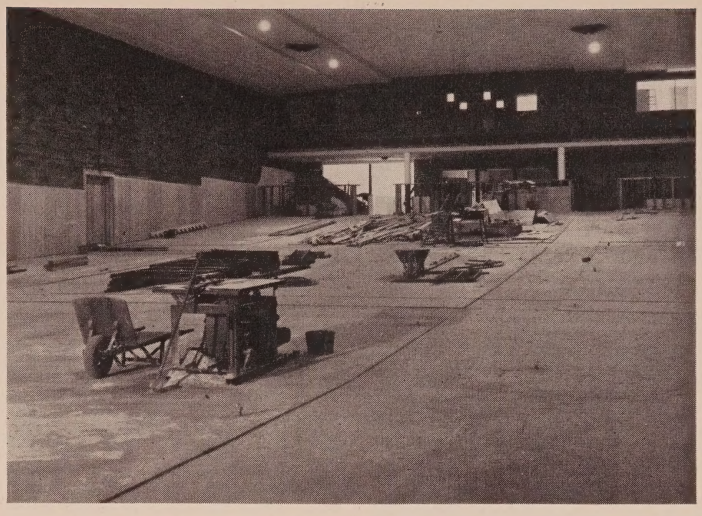
Floor finish may be placed after the base has hardened or while the base is plastic. The first method is preferred, as the finish is then put on after other building operations have been completed and, therefore, is less likely to be damaged. Better control of the water content is also obtained. Good results can be secured in either case if the base is properly prepared.

It is essential that the base be of good quality to prevent the finish from pulling away from it. The quality in floors above ground is usually governed by structural requirements.

Preparation of Hardened Base — In two-course construction, a good bond between the base course and wearing surface is essential. It is readily accomplished by attention to the preparation of the base to receive the topping. The wearing course for heavy-duty floors such as are needed in theatres should be placed after the base has hardened.

The base course in new construction should be brought to grade not less than 1 in. below the finish grade. When it has partially hardened so that it will retain the impression of a broom, it should be brushed with a stiff-bristled broom, removing all laitance and scum. The brooming should expose some of the aggregate and score the surface to provide mechanical bond for the wearing course. The base should be wet-cured for at least 5 days, unless high early-strength portland cement or concrete is used; this should be cured at least 2 days and protected from grease, plaster, paint, or other substances which would interfere with the bond.

Immediately prior to placing the finished topping, the base course should be thoroughly cleaned by scrubbing with clean water and a stiff brush. Foreign substances not removed by the scrubbing should be chipped off. If the base has been allowed to dry out, it should be thoroughly wetted; preferably kept wet overnight.



A NEARLY COMPLETE AUDITORIUM FLOOR shows the concrete slab in place with the proper depression for aisle carpeting. Careful grading has resulted in a sloped floor that will assure a good view from every seat. Chairs will shortly be installed securely with expansion bolts.

There should be no pools of water on the surface, however, during the next operation. Thoroughly broom into the wet surface a slush coat of cement and water mixed to the consistency of thick paint, brushing out well to avoid too heavy a layer. The topping should then be placed immediately to avoid drying of the slush coat.

Resurfacing a Base — Although properly proportioned concrete, carefully laid and cured, gives a floor surface maximum wear resistance, some theatre floors are occasionally improperly built. These may become so badly pitted and worn that it becomes necessary to provide an entirely new surface.

On resurfacing jobs where the old floor level must be preserved, the old concrete must be cut away to a depth of 1". Where a new topping is to be placed directly over an old one without chipping off the old surface when the floor will stand the added load and raising the floor level is not objectionable, the new topping should be at least 2" thick and reinforced with wire mesh, weighing not less than 30 lb. per 100 sq. ft. and placed approximately in the middle of the concrete. The surface of the old floor should be roughened with a pick or grinding tool. All loose particles, grease, oil, paint or other materials must be removed. Grease and oil may be removed by scrubbing with gasoline. Paint must be chipped off. Sandblasting is sometimes helpful, and scrubbing with a 10 per cent muriatic acid solution or with strong washing soda solution is helpful in removing dirt and other substances.

After the slab has been cleaned, it should be saturated overnight. A slush coat of cement and water should then be broomed into the surface just prior to placing the concrete for the topping.

Integral Finish Preparation — When the finish is to be placed on the base before the latter has hardened, it is important to use a mix in the base which will not permit water to collect in puddles on the surface. If this occurs, the wearing course will absorb the excess water, greatly reducing the durability and strength of the finish.

The mix for the base, therefore, should be adjusted if necessary to prevent water gain on the surface. Any water that collects on the surface of the base should be removed before the wearing course is applied. The base course should have stiffened sufficiently so that footprints will not be made by the workmen when they are placing the topping.

Placing and Compacting Topping—The exact procedure to be followed in placing and compacting the topping will depend on whether or not a mechanical float is to be used. The concrete may be spread with shovels and ordinary garden rakes to a fairly uniform level, slightly above the finished grade, and compacted with tampers or rollers or both. It should then be struck off to grade, floated with mechanical or wood floats and finally troweled to the desired finish.

Tamping or Rolling — The concrete should be compacted throughout its depth by tamping with iron tampers or rolling with weighted rollers. This gives a hard, compact topping essential for a durable floor. When rollers are used, particular attention should be given the areas around columns and at walls where it is difficult to make rolling effective. Any areas that are not reached by the roller should be thoroughly tamped.

Screeding—Screeding is the operation of striking off the concrete to the proper level. When using the mechanical float some contractors place small precast concrete blocks in mortar at intervals of 8 to 10 ft. in both directions on the base. A surveyor's level or straightedge and spirit levels may be used to place these at the proper level.

After the concrete has been spread and tamped or rolled, a straightedge is

placed over two of the blocks and moved with a sawing motion to compact the concrete. The straightedge is not moved horizontally.

Thus a line of compacted concrete the width of the straightedge (usually about 1″) is provided between the two blocks, and this forms the screed strip. The process is repeated between the next two blocks, and so on, giving screed marks every 8′ or 10′ in two directions. Additional screed marks are made every 4′ to 5′ in the same way, using the screeds already placed as guides.

A scraper is then used to strike off the concrete to the level of the screed strips. The scraper should be about 5′ long, slightly beveled on the bottom and have a strip of steel on the face. The blocks are then removed and the spaces filled with concrete.

When floating is done by hand, wood screed strips are often used. These are placed at the proper level with the aid of a surveyor's level or spirit level. The straightedge is moved across the strips in a sawing motion and, at the same time, is advanced horizontally to strike off the concrete. The strips are then removed and the spaces filled with concrete.

Floating—Floating is done to compact the surface, fill up the hollows, and iron out the humps left after screeding and tamping or rolling. As previously stated, the power float machine will permit the use of a much stiffer, harsher mixture than can be used when floating with wood or cork floats by hand. The machine consists of a steel disk 20″ to 24″ in diameter on which a motor is mounted. By means of a handle the machine is operated over the surface of the floor. The rotating of the disk compacts the concrete and floats out the topping to a smooth surface. With the proper mixture only enough mortar will be brought to the surface for steel troweling.

Troweling—Troweling is an extremely important operation and one which requires experience and skill for the best results. It should be done at the proper time, which is after the concrete has hardened sufficiently to prevent drawing moisture and fine materials to the surface. When the mechanical float is used, the first troweling may be done immediately after floating. When floating is done by hand it is necessary to use a more plastic mixture and therefore it is necessary to wait for a period after floating until the surface becomes fairly hard.

Cement or mixtures of cement and sand should not be spread on the surface to absorb excess water nor should water be added to facilitate troweling. Final troweling should be done after the concrete is so hard that no mortar accumulates on the trowel and a ringing sound is produced as the trowel is drawn over the surface. This will polish the surface to a smooth finish.

More About Curing—Proper treatment of the floor after it has been troweled is too often neglected. As stated previously, the concrete must be kept moist so that the cement will continue to combine chemically with the water. This curing process should be started as soon as possible. If it is delayed so that rapid evaporation takes place in the early stages, the surface may crack, craze or dust. The longer the concrete can be kept wet, the stronger, more impervious, and more wear-resistant it will be.

There are several methods of curing concrete floors. The ponding method is sometimes used, in which the floor slab is surrounded by small dikes of sand and the enclosure kept filled with water to a depth of an inch or so. As stated previously, frequent sprinkling of the surface and covering the exposed surface with wet sand or wet burlap are other ways of providing curing. Such coverings should be placed as soon as this can be done without marring the surface and then should be kept continuously wet.

Heavy paper impregnated with asphalt to make it waterproof is also used for curing. This is placed as soon as it can be done without marring the surface and will protect the floor from dirt and debris resulting from other building operations. All seams should be lapped and sealed with glued tape to provide a continuous waterproof covering. It will be recalled that colorless membrane curing compounds are also used.

In cold weather construction, when artificial heating devices are used, special precautions are required. The high temperatures near the heating devices cause rapid drying unless the concrete is well protected. Heaters should be raised, and the floor underneath for a distance of several feet on all sides of the heater should be covered with 3″ or 4″ of sand. The sand should be kept saturated with water through the curing period.

Cold Weather Precautions — Concrete hardens very slowly at temperatures below 50° F., and the hardening practically ceases at freezing temperature. Special precautions are required for all concrete work in cold weather, but, due to the relatively thin layer of concrete and large area of exposure in floor finish, such precautions are particularly important. All concrete should be protected from freezing until it has gained sufficient strength so that it will not be damaged. When necessary, heat should be furnished.

On leaving the mixer, the fresh concrete should be free from ice or frozen lumps and should have a temperature of not less than 70 nor more than 80° F. Heating only the mixing water is often sufficient; in other cases it may be necessary to heat both mixing water and aggregate to meet these requirements. The concrete temperature should then be maintained above 70° F. for at least 3 days, or above 50° F. for at least 5 days when using normal portland cement and above 70° F. for at least 2 days or above 50° F. for at least 3 days when using high early strength portland cement. The floor should be kept wet during this period.

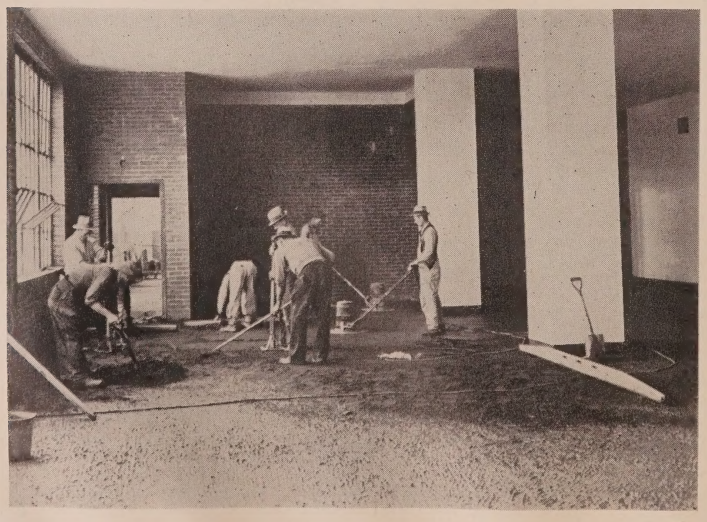
The temperature of the hardened slab should be as near that of the new concrete as possible. Warm concrete placed on a very cold, hardened slab will not bond well and when the top course is cooled it may shrink enough to break away from the slab.

Grinding — Some concrete floors are finished by grinding. Mechanical grinders remove the thin film of cement paste that covers the surface after troweling, thereby exposing the aggregates. Such finish needs only one troweling.

Grinding should not be started until the concrete has cured and hardened sufficiently so that aggregate particles will be cut and not torn from the surface. Large double-disk electrically operated grinding machines, such as those used for finishing terrazzo floors, have been found economical. The floor is generally kept saturated during grinding. When necessary, air holes and pits may be filled with a cement grout of creamy consistency.

Cleaning and Finish—The new floor finish should be protected from accu-

SOUND CONCRETE FLOOR CONSTRUCTION involves a number of painstaking steps. Note roughness of base slab and stiffness of concrete mix being spread with shovel and rake. Concrete is then tamped, screeded, and floated, usually by machine. The floor is then trowelled and cured.



mulations of building debris until the completion of the structure. To remove accumulated dirt, the surface should be well swept with a stiff broom and thoroughly scrubbed with white soapsuds. A scrubbing machine fitted with wire brushes or pads of fine steel wool is very effective. The suds and dirt should be mopped up and the surface flushed with clean warm water and again mopped.

DECORATIVE CONCRETE FLOORS

In lobbies, foyers, and smoking lounges where floors are particularly subject to lines of traffic, wet feet, spilled soft drinks, dropped candy and popcorn, and sparks from cigarettes, decorative concrete floors are a wise choice. Since the floors in aforementioned areas of the theatre are far more exposed to the eyes of patrons than that of the auditorium, they must be attractive as well as safe and durable. A good decorative concrete floor will combine the wearing features of the ordinary type with the added quality of eye appeal.

Terrazzo

Terrazzo floor finishes offer unlimited possibilities for decorative effects in concrete, thus combining beauty and durability. In large areas of plain color or in patterns of many colors, they are widely used in theatre floors subject to heavy traffic and abuse.

Plain terrazzo provides attractive, long-wearing floors at low cost. More decorative effects are produced by introduction of pattern and by increasing the number of colors. The original beauty of terrazzo is retained with a minimum of upkeep, and terrazzo surfaces are easily kept clean and sanitary. Terrazzo may be laid in individualized patterns, or in colors to harmonize with the color and decorative scheme of the theatre interior.

Terrazzo is produced by laying mixtures of concrete containing marble chips or other aggregates of the desired colors. Additional aggregate is rolled into the fresh concrete when necessary so that 70 to 85 per cent of the finished floor area will consist of aggregate. Coloring pigments may be added to produce a matrix of almost any shade and color desired. White portland cement should be used where clarity of color is important. After the concrete mixtures have hardened for several days, the surface is ground and highly polished.

Brass strips or dividing strips of other suitable material are used to separate the colors for the desired pattern. They also prevent shrinkage cracks which are particularly objectionable in decorative floors. The terrazzo course may be bonded to the structural base slab or may be separated by means of a sand cushion ¼″ thick and a layer of tarpaper. Structural cracks which occur in the base slab will not be transmitted to the terrazzo top course if this is separated from the base.

An underbed of 1:4 mortar, about 1½″ thick, is placed, and the dividing strips are inserted in the mortar in the desired pattern. When this has hardened sufficiently, the terrazzo mixtures consisting of 1 part of portland cement and 2 parts of aggregate are applied. The floor is then rolled until thoroughly compacted, and after hardening sufficiently it is ground and polished.

Skilled labor working under adequate supervision is necessary for a good terrazzo job. The work should be entrusted to floor specialists whose experience has shown them capable of rendering the class of workmanship desired.

Concrete Tile

Beautifully colored, long-wearing floors of precast concrete tile are used in residences, office buildings, hotels, churches, theatres, and similar structures. When made of marble chips and ground and polished, the tile are often referred to as art marble. The tile may be secured in many colors, shapes and patterns, and special designs may be made to order. They should be secured from reliable manufacturers.

When tile are to be installed, the concrete base course is brought to within 2 or 2¼″ of the finished grade, left with a rough surface and allowed to harden. Mortar of 1:3 mix is placed on the dampened base, and the tile are laid in the desired pattern. Before the tiles are laid, they should be soaked in water for 10 or 20 minutes, and then allowed to dry for about the same length of time, the object being to have them uniformly damp, but not saturated with water. Tile should be laid by experienced mechanics.

Color with Pigments

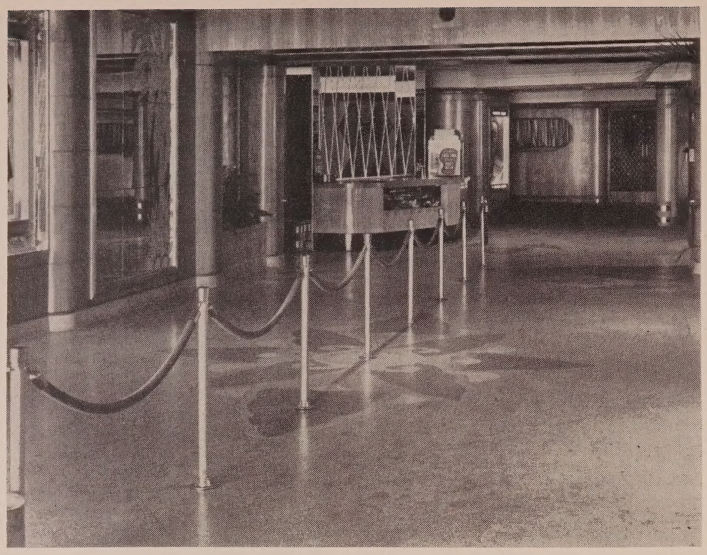
A wide range of color is obtainable with the use of mineral coloring pigments mixed with the concrete finish. A single uniform color such as red, green or brown is most widely used in floors of this type, although a border of one color and field of another, as well as simple patterns involving two or more colors, has been used to some extent.

Only pigments resistant to alkali should be used. Mortar colors containing a large percentage of filler are not suitable. Pure mineral pigments and factory-prepared mixtures of cement and mineral pigment are available for the purpose. Manufacturer's directions should be carefully followed. Where mixing is to be done on the job, it should be very thorough to secure uniform dispersion and full color value of the pigment.

Various methods of mixing are used. The pigment may be added to the other dry ingredients and mixed thoroughly before the water is added. A color mixer or small ball mill may be used to mix the cement and pigment to a uniform color before these are added to the aggregate and water. Another method of mixing the pigment and cement is to pass them through a ⅛″ or finer sieve until the mixture is uniform. After all the ingredients are in the mixer, the batch should be mixed for at least 2 or 3 minutes and until it is uniform.

The color values of pigments vary with their fineness and purity. In comparing them, one should be guided by

TYPICAL CONSTRUCTION STEPS in building a colored concrete floor are shown here: 1. after screeding to proper level, dust-on color mixture is applied; 2. floating forces mixture into surface; 3. steel-troweling to a smooth surface; 4. troweling colored topping on two-course job; 5. the troweled surface is brushed with care.



HANDSOME GEOMETRIC DESIGN OF TERRAZO in lobby floor of Miracle, Coral Gables, Fla., is matched by specially designed inlaid foyer carpet. Note guard rail passing through exact center of figure.

the amounts required to produce the desired color and shade. This can best be done by making test samples, allowing them to dry.

Stained Floor Finish

Attractively colored floors are secured with the use of certain inorganic chemicals. These are applied to the hardened floor and react with the cement to form new compounds in the concrete to produce the color. Several applications are often necessary before the desired effects are attained. A mottled or multi-tone effect is generally produced, depending somewhat on the amount of troweling done in finishing. A number of manufacturers can supply the materials used.

Painted Finish

Concrete floor finish may be painted to attain any color effect. Oil paints, rubber-base paints, and synthetic resin paints are available for this purpose. It should be realized that any traffic causes a certain amount of wear, and in aisles and other places where foot traffic is heavy, touching up at intervals may be necessary and an occasional complete repainting required to keep a good appearance.

Concrete should be clean and thoroughly dry when it is to be painted. The recommended procedure in the past has been to allow several months after construction for curing and drying and then to neutralize the surface by mopping it with a solution containing 2 to 3 lb. of zinc sulphate per gallon of water. After allowing 48 hours for this solution to react with the concrete and to dry, the surface is cleaned with water to remove all crystals. It is then allowed to dry thoroughly before applying the paint.

Recent laboratory tests indicate that an even better procedure is to allow the concrete to dry for several weeks after the curing period; then apply generously a solution of 3 oz. zinc chloride and 5 oz. of ortho-phosphoric acid (85 per cent phosphoric acid) per gal. of water. After drying 24 to 48 hours, any dust on the surface should be brushed off, but the surface should not be rewetted before applying the paint. While the laboratory tests gave excellent results with this treatment, actual field applications have been very limited up to the present time.

Three coats of paint are recommended. The first coat should be very thin—about equal parts of thinner and paint give about the proper consistency. Some thinner may be used for the second coat, and the third coat may be applied as it comes from the can.

Scoring and Division Strips

Concrete floors may be marked off into conventional patterns by the use of an ordinary grooving tool on the fresh concrete or with a power-driven carborundum disk cutting appliance on the hardened concrete. An objection to grooves is the difficulty of keeping them clean. When the floor is mopped the dirt is deposited in the grooves.

Another method of marking off the floor surface is with metal strips like those used for terrazzo. These have the advantage of eliminating open scoring joints. Shrinkage of the surface tends to localize along the strips, thus preventing surface cracking. The strips are available in brass, nickel silver, zinc, and plastic in 12 to 18 gage and from 1" to 1⅜" wide. For joints more than ⅛" wide, strips of the "heavy top" type are used.

Division strips are used both in single color floors and in floors having two or more colors. In general, they should be placed not more than 4' apart to be effective. In floors to be finished by troweling and not to be ground, care must be exercised to set the strips at the exact finished level.

COLORED STRIPS INLAID IN THE TERRAZZO FLOOR give the lobby of the Flower, Takoma Park, Md., a look of attractive spaciousness and also serve to direct entering patrons on into the foyer.

COVERED FLOORS

Where concrete floors are to be covered with linoleum, composition tile, prefinished wood tile or planking, carpeting or similar materials, it is not necessary to provide a heavy-duty wearing surface on the concrete. The dust-coat method of finishing may then be used.

The structural slab is struck off reasonably true at the required floor level and excess water or laitance removed. A mixture of dry materials consisting

of 1 part of portland cement and 2 parts of coarse, clean sand is dusted on the unhardened concrete in a uniform layer not over ⅛" thick. When the dry materials have absorbed moisture from the slab and the concrete has hardened enough to allow finishing, it is floated and troweled to unite the dust coat with the base and give an even surface free from air holes, depressions, and other blemishes. The floor should be protected and cured as recommended for other types. This dust-coat method of finishing should not be used for uncovered floors where the finish would be directly subjected to traffic.

Wood, Linoleum, Rubber, and Cork Tile

When wood, linoleum, rubber or cork tile is to be used, the concrete must be thoroughly dry before cementing the surfacing material into place. Moisture, even in very small quantities, will eventually lead to the decomposition of the adhesive. A simple test to determine whether or not the concrete is dry may be made by laying pieces of linoleum at several places on the floor, weighting them down so they will have uniform contact with the surface. If, after 24 hours, moisture appears on the underside of the linoleum, it will be necessary to let the concrete dry further before cementing the covering to it. The directions of the manufacturer of the materials being used should be followed.

Carpet

Floors to be covered with carpet require wood nailing strips, usually around the border of the area. These should be well seasoned lumber, dressed to 1"x2" and embedded in the unhardened concrete. Special snap inserts are sometimes embedded in the concrete instead of nailing strips. In this case fastening devices are attached to the underside of the carpet.

The surface of the concrete floor should be screeded, troweled flush with the tops of the wood strips, and should present a smooth, even surface. It should be cured and allowed to dry before placing the carpet. Pads or cushions under the carpet prolong the life of the carpet and assist in producing soundproofness.

MAINTENANCE

Concrete floors should be accorded their rightful share of attention in any theatre maintenance program to insure their continued high quality of service and durability. Although relatively little expenditure of time, effort, and money is required to keep concrete floors in first-class shape, it is vital to give them whatever repairs, cleaning, and treatments are needed.

Repairs

Floors are sometimes so poorly built as to be wholly inadequate for the service intended. In such cases it is advisable to remove the defective top surface and replace it with a new one in accordance with the suggestions given previously. Failure to observe some fundamental requirement in construction may result in certain defects which often can be corrected by proper treatment or repairs.

LINOLEUM OR SIMILAR FLOOR COVERINGS may be easily applied to concrete subfloors, but they must be finished to a true, even surface and should be thoroughly clean and dry before application.

Dusting — Floor finishes that dust under service may usually be improved by a hardener treatment. Whether a hardener treatment will entirely stop dusting will depend on the construction methods used and the resulting condition of the surface.

Where there is a thin layer of soft, chalky material at the surface, this may often be removed with pads of steel wool attached to a scrubbing machine. After removal of this material, the surface should be thoroughly cleaned, allowed to dry, and one of the hardener treatments applied. In other cases, it is necessary to grind the surface before treatment.

Cracking — Cracks in concrete floors may be classified as (1) structural cracks originating in the base and extending through the finish, and (2) cracks confined to the wearing course. The latter may extend through the wearing course, or may be of a superficial nature, ordinarily called "hair cracks" or "crazing."

Structural cracks may be caused by shrinkage, temperature changes or settlement. If there is recurrent movement, there is little that can be done other than to keep them filled with a mastic material. Crazing cracks may be removed by grinding if they are not too deep. The only other method of removing them is to remove the affected area and replace it with new material.

In many cases cracks may be filled with varnish or resin. Although they will remain visible, accumulations of dirt and leakage will be prevented. Artificial resins such as Cumar (available through paint and varnish manufacturers) may be used. This should be powdered and dissolved in a suitable solvent such as xylol, in the approximate proportions of 6 lb. of resin per gallon of solvent. A varnish-like material is produced which can be run into the cracks. Cement may be added to make a thicker solution for wider cracks.

In patching concrete floors, the old wearing surface should be chipped off to a depth of at least 1". The roughened surface should be thoroughly cleaned of loose particles and should be saturated with water for several hours before placing new concrete. The area surrounding the patch should be wetted also.

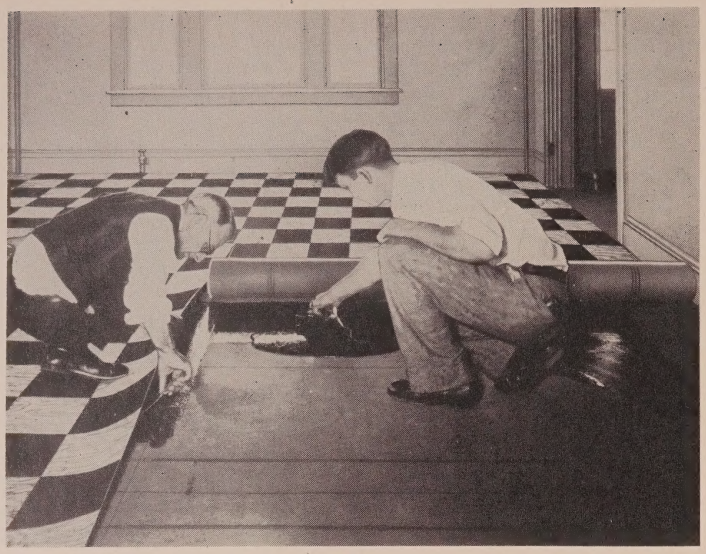
Roughened Floors — Floors that have been improperly constructed may become roughened under service, or pitting may occur due to heavy impacts. Often such floors may be put into satisfactory condition by grinding off the roughened surface and will give good service for many years. On the other hand, if the concrete is of such poor quality that the surface will soon become roughened or pitted again, it would be more economical to resurface it with the proper quality of concrete.

Equipment Attachment—Theatre seats may be rigidly fastened to concrete floors with expansion bolts. For satisfactory results the concrete must be of such quality that it will resist the stresses developed by the equipment to be attached. The wearing course should be constructed as recommended previously. If large bolts extending into the base course are used, the base course should be well proportioned with not over 6 gal. of water per sack of cement to provide a good grade of concrete.

The usual procedure is to mark the location of bolts on the floor after it has hardened and cured, then drill the holes to the proper depth for insertion of the expansion shells.

Cleaning

Properly constructed concrete floors will require little maintenance other than cleaning. Periodic cleaning is essential to durability, as grit and dirt on floors subjected to considerable traffic will be ground into the finish and accelerate the rate of wear.



RUBBER, ASPHALT, OR CORK TILE AND THE LIKE may also be quite readily applied to an even, clean, and dry concrete subfloor in such places in the theatre as lobbies and restrooms.

Floors subjected to spilled milk, syrups, fruit juices, brines, fats and oils, any many other industrial products should be thoroughly scrubbed frequently. In many plants it is necessary to scrub the floors at least once a day. Warm, soapy water and stiff brushes should be used, after which the floor should be mopped clean. Electric scrubbing machines are widely used for cleaning large floor areas.

Decorative floors should be cleaned with warm, soapy water prior to use and at subsequent intervals depending on the severity of service. Only mild soaps should be used on terrazzo and other types of decorative floors. Soap should be removed by rinsing thoroughly to prevent the surface from becoming slippery.

Terrazzo floors acquire a beautiful natural sheen when they are washed often for the first 2 or 3 months. After this period, less work will be required in their upkeep.

Surface Treatments

The durability of concrete floors depends primarily upon observance of the fundamental rules in making, placing, curing, and finishing the concrete. Dusting of the floor surface may occur if these rules are violated.

Many of these floors may be improved by applying some material to assist in hardening and binding the surface. These treatments are not cure-alls for poor materials or careless workmanship and will not make a perfect wearing surface of a poorly built floor. Magnesium fluosilicate, zinc fluosilicate, sodium silicate, aluminum sulphate, zinc sulphate, Chinawood and linseed oil and various gums, resins and paraffins are substances used for this purpose. Sometimes paints are applied after these treatments as further protection.

It is essential that the floor be clean and free from plaster, oil, paint or other foreign substances before giving any further treatment. It should also be fairly dry to assist penetration. When paint of any kind is to be used, it is important that the concrete be absolutely dry.

Fluosilicate—The fluosilicates of zinc and magnesium dissolved in water have been used with good success. Either of the fluosilicates may be used separately, but a mixture of 20 per cent zinc and 80 per cent magnesium appears to give the best results. In making up the solutions, ½ lb. of the fluosilicate should be dissolved in 1 gal. of water for the first application and 2 lb. to each gallon for subsequent applications. The solution may be mopped on or applied with a sprinkling can and then spread evenly with mops. Two or more applications should be given, allowing the surface to dry between applications.

About 3 or 4 hours are generally required for absorption, reaction and drying. Care should be taken to mop the floor with water shortly after the last application has dried to remove incrusted salts, otherwise white stains may be formed.

Sodium Silicate — Commercial sodium silicate is about a 40 per cent solution. It is viscous and requires thinning with water before it will penetrate concrete. A good solution consists of 3 gal. of water to each gallon of silicate. Two or three coats should be used, allowing each coat to dry thoroughly before the next one is applied. Scrubbing each coat with stiff fiber brushes or scrubbing machines and water will assist penetration of the succeeding application.

Aluminum Sulphate — This treatment consists of one or more applications of solutions of aluminum sulphate. The solution is made in a wooden barrel or stoneware vessel, and the water should be acidulated with not more than 1 teaspoonful of commercial sulphuric acid for each gallon of water. The sulphate does not readily dissolve and requires occasional stirring for a few days until the solution is complete. About 2½ lb. of the powdered sulphate will be required for each gallon of water.

For the first treatment the solution may be diluted with twice its volume of water. Twenty-four hours after this application the stronger solution may be used, and 24 hours should elapse between subsequent applications.

Zinc Sulphate—This treatment consists of the application of a solution containing 1½ lb. of zinc sulphate and a teaspoonful of commercial sulphuric acid to each gallon of water. The mixture is applied in two coats, the second coat applied 4 hours after the first. The surface should be scrubbed with hot water and mopped dry just before the application of the second coat. This treatment gives the floor a darker appearance.

Oil — Chinawood, linseed, or soybean oil may be diluted with gasoline, naphtha or turpentine and applied with mops or large brushes. About equal parts of oil and thinner give a good mixture for this purpose, and often a single application is sufficient. In some cases the oil treatment may be repeated to advantage at semi-annual intervals.

Coverage—The amounts of the above solutions required to treat floors will vary considerably with the porosity of the concrete. Generally, a gallon of any one of the solutions will be required for each application on 150 to 200 sq. ft. of floor surface.

CONCLUSION

In the final analysis, a good concrete floor is one of the soundest investments any theatre operator can make. Unlike many materials, concrete develops greater strength with age and easily bears the heavy foot traffic of the theatre year after year without ill effects. Rot and decay are unknown to concrete, and termites are certainly no menace to the theatreman whose house has concrete floors.

Fire is a less formidable hazard to the owner of a theatre with concrete floors, and they do not settle or warp. Furthermore, concrete's smooth, even surface provides a perfect base for the wide selection of coverings used in the typical theatre today. All types of finishes may be laid with economy on concrete subfloors, or the concrete may be left exposed, marked in patterns, and coated with non-slip wax to avoid falls on the part of patrons.

Lastly, for comfort, just as for construction superiority and economy, concrete floors are unmatched. To say that they are warm, dry, and generally comfortable does not even fully sum up their advantages. They impart a feeling of well-being and security to every theatre in which they are used.

* * *

Acknowledgment

The Editors of THEATRE CATALOG wish to express their sincere gratitude to the Portland Cement Association for supplying the material and illustrations contained in the foregoing article.

How to Keep Walls and Floors Dry

Special Waterproofing Compounds for Masonry and Cement Prevent Entry of Moisture

Because all concrete and other masonry surfaces are porous, either because of the natural evaporation of the water during the drying process or their inherent structural characteristics, fine pores and openings exist which may escape notice by the naked eye. When ground conditions prevent normal absorption of water, or when hydrostatic pressure builds up behind walls, such channels though microscopic invite water seepage.

Scope of Waterproofing

The theatre operator should realize that waterproofing is a process which depends for its success upon a clear understanding of the underlying problems. For example, above ground and below ground conditions may pose vastly different problems. And well-drained soil and a temperate climate will present a simpler situation than poorly drained, heavy soil where hydrostatic pressures exist or where excessive rainfall or high humidities bedevil the land.

Quality materials correctly applied by experienced contractors in accordance with approved specifications written for the conditions encountered will provide satisfactory protection. But there are some things that waterproofing compounds will not do. They will not overcome defects in the structure itself, nor will they always compensate for poor design. However, within their proper scope, they will provide a continuous barrier against moisture over extended periods of time.

Various Types Available

Typical waterproofers include: inorganic compounds, metal-base compounds, asphalt-base compounds, plastic-base protective coatings, cement water paints and, in a slightly different application, plastic floor tile. Although their chemical compositions vary, these protective waterproofing compounds all perform the same function of sealing up the pores in masonry and cement.

Inorganic Compounds

Inorganic waterproofing compounds in general are composed of inorganic powders, finely ground and properly balanced for optimum sealing. Mixed with water and brushed or sprayed on properly prepared porous masonry surfaces, they can be used on inside and outside surfaces, below or above grade. Their applications include: unglazed tile, concrete masonry, rough masonry, retaining walls, stucco surfaces, copings, cinder block walls, brick piers, brick walls, field and quarry stone, sand-grit blocks, sandstone, Indiana limestone, and other stonelike materials.

Available in a variety of colors — gray, white, red, blue, green, buff and cream —, the inorganic waterproofing compounds repel water by penetrating and sealing the pores of the concrete or masonry surfaces to which they are applied. In fact, it is the filling of the pores and not essentially the surface coating which stops the penetration of water.

Proper surface preparation is important. All surfaces must be thoroughly cleaned before application of the waterproofer. All covering such as whitewash, fish oil, linseed oil paint, tar products, paraffine, casein paint, etc., must be removed to establish the needed porosity in the material to be treated. Surfaces should be free from sharp rock projections, nails, wire, or anything else that prevents the formation of a continuous film. Holes, joints and cracks should be pointed up, door and window frames caulked and surfaces cleaned of dust, dirt, scale and loose particles.

After proper application by brush or spray on prepared and dampened surfaces, the inorganic waterproofing compound becomes completely hard and an integral part of the concrete or masonry to which it is applied. If the concrete is of sufficient thickness and strength, the waterproofer can be used successfully on surfaces under hydrostatic pressure.

BRIEF: ***Moisture in all its maliciousness . . . seeping through the walls and floors of a theatre . . . is an arch Nemesis of the motion picture house . . . It viciously mildews furniture . . . savagely rusts metal machinery and equipment . . . creates an environment which readily appeals to insects . . . There is nothing better calculated than such moisture . . . if left uncontrolled . . . to add a few more gray hairs to an owner's head . . . This deadly enemy of the theatre can be kept in check, however . . . by use of several sound waterproofing compounds now available . . . These moisture stoppers . . . properly applied . . . will stop the foe right in his tracks . . . provided the basic structure has no serious defects . . . and is well designed.***

AN AIR GUN provides a very acceptable method of application on large surfaces. In this closeup Mica Insul-Mastic is being sprayed on a masonry wall. This particular product is supplied in white or light shades and is highly adaptable for theatres. *(Photo courtesy of Insul-Mastic Corporation of America)*

In one demonstration, the waterproofing compound on cinder block withstood a hydrostatic pressure of 500 pounds. Since tests prescribed by the U. S. Bureau of Standards call for a maximum 2″ head of water, or 10 pounds pressure per square foot, the reported test is approximately 50 times more severe than government specifications require for passing.

Inorganic waterproofing compounds are effective for ten years and over if they are applied on untreated and clean, porous masonry surfaces in accordance with manufacturer's directions; and if waterproofed surfaces are not pierced by means of screws, nails, toggle bolts, or other instruments. Other basic requirements for effective functioning may arise with individual products.

Metallic-base Compounds

Designed primarily for repair work, a metallic-base waterproofer is available which consists of a special chemical mixture of iron and other chemicals. When mixed with water only and brushed into the cracks of walls and floors needing repair, this compound will waterproof and stop leaks, even under severe conditions. It is said to be effective on concrete, brick, stone and tile, and below-water-line basements and pits under pressure.

Asphalt-base Compounds

Asphalt-base protective coating compounds are supplied in viscous liquid form, ready for use. One product in this group, of a stable, non-flowing, non-staining, mineral colloid type, is made from a blend of selected asphalts, finely divided and dispersed in water by means of an emulsifying agent. This compound is durable under weathering and can be used without heat or fear of fire. The dried film does not sag, run, or flow when subjected to the highest temperatures, nor will it craze, crack, or "alligator" under long exposure. The film remains elastic and smooth, resisting oxidation for many years when applied in the proper thickness. A membrane and/or cloth can be utilized for augmented protective effect.

Another asphalt-base waterproofing compound, chosen by the U.S. Government for use in its long-range preservation of armaments and materials, has a moisture-vapor transmission rate of 0.01 grams per 100 square inches per 24 hours for an ⅛ inch thick coating. This water-repellant product, which contains a high percentage of Gilsonite, is applied by high-pressure spraying equipment. If, in time, the coating is accidentally punctured, the over-all waterproofing efficiency of the coating will not be affected adversely because the entry and spread of moisture will be confined strictly to the puncture itself. Such punctures can be easily patched.

The manufacturer states that, in addition to being water-resistant, this compound is: resistant to acids, alkalis, and salts; rust and corrosion-proof; sound-deadening and vibration-dampening; insulative; condensation preventing; flexible; tough; heat- and fire-resistant.

Asphalt-base waterproofing compounds, like the inorganic powder variety, require a clean, porous surface for their reception and retention. Their life, too, compares roughly with that of the powder type, lasting from ten to twenty years under normal circumstances.

Plastic Waterproofers

Plastics, the ubiquitous materials of the modern industrial world, have also been adapted to use as waterproofers. Surface coatings, based upon vinyl chloride-acetate resins, are highly regarded by industry for their capacity to fulfill many of the unusual and exacting requirements specified by coatings users. Correctly formulated and applied, VINYLITE Resins yield air-dry or baked finishes of unusual toughness, gloss, adhesion and chemical resistance, not only on concrete but also such widely different materials as metals, cloth, paper and wall tile.

Their alkali-resistance enables these finishes to be used over concrete, cement-asbestos, and alkaline wallboards without any special precautions. And because they do not fail by checking, upon prolonged exterior exposure, these finishes are particularly well suited for application on walls exposed to the weather. They possess, among their other qualifications: absence of odor, taste, and toxicity; extreme chemical inertness, good water resistance; excellent toughness and flexibility; non-flammability; good clarity; relatively high refractive indices; and resistance to age and weathering.

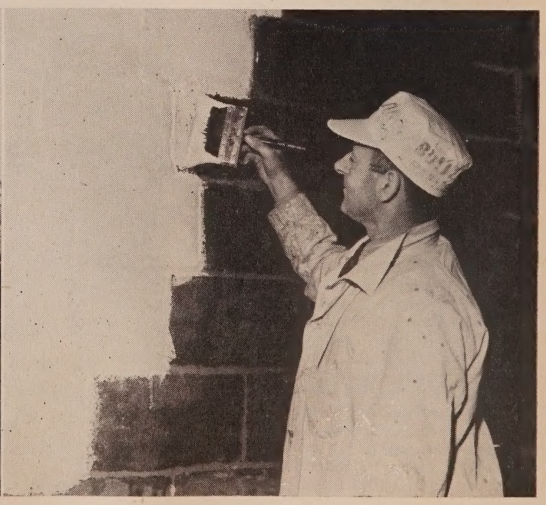
Cement Water Paints

Some waterproofers incorporate cement in their composition. To this group belong the cement water paints, important members of the paint family. Usually, their base is Portland cement, scientifically combined with other materials to meet varying conditions, and available in various colors.

Although some white cement water paints, in their powdered form, may appear grayish, they are of dazzling whiteness when properly mixed with water and applied according to the manufacturer's directions. Cement water paints, either white or tinted, are used extensively on brick, concrete, stucco and stone surfaces, both on exterior walls and for the interior finishing of basements and other places which may have a tendency to dampness.

A MEDIUM SHOT of a half completed brick wall being brush resurfaced with Mica Insul-Mastic. The result is an attractive finish that will protect against the ravages of the elements and will present an overall tidy appearance. *(Photo courtesy of Insul-Mastic Corporation of America.)*

CLOSEUP showing the brush application with cement paint of normally porous concrete block. This will weather-seal it as well as improve its general appearance. Such paint is expected to have a surface life of eight years. *(Photo courtesy of National Paint, Varnish and Lacquer Assoc.)*



A report of a committee of the American Concrete Institute published in the journal of that organization, includes these principal comments and suggestions: "Portland cement paints are suitable for use on exterior and interior Portland cement concrete and stucco surfaces excepting floors or other areas subject to mechanical abrasion . . . They are especially recommended where it is desired to decorate and reduce the water permeability of exterior walls built of porous, open-textured concrete such as concrete block masonry or where the concrete or stucco is damp at the time of painting or may become damp subsequently . . . The typical film possesses good decorative qualities as to hiding power and color. However, when wetted, as by rain, it becomes slightly translucent or darker and appears somewhat less satisfactory than when dry. However, on drying out, the film returns to its original color and opaqueness. Tinted paint films also assume a deeper color when wetted.

"Durability depends upon several factors including the composition of the paint, texture and cleanness of the concrete surface, careful preparation of the surface, application procedure and the severity of the exposure. Based on information from several sources, it appears that Portland cement paints properly applied to exterior wall surfaces exposed to the weather may be expected to have a surface life of about eight years."

Generally, it is advised to defer painting of new masonry until efflorescence has become negligible. And for a good job, it is of first importance to users of cement water paint to read and carefully follow the instructions of the manufacturer. Otherwise, the user will have only himself to blame if he fails to obtain satisfactory results.

Miscellaneous Items

Other products, mention of which is germane to any survey of waterproofing methods although they are not coating compounds, include: plastic floor tile, mortar sealants, and sealing adhesives.

Plastic Floor Tile

Plastic floor tile, of course, offers decorative possibilities and wearing qualities not present in conventional waterproofing compounds. On the other hand, its installation may be more costly. One plastic floor tile on the market is available in some nineteen standard colors. This tile can be installed over any smooth hard surface, concrete, wood, metal, or tile. It combines a 3/32" top surface of Tygon Plastic (the tough, flexible plastic used by industry to protect plants and equipment from acid attack) with a 3/32" layer of synthetic impregnated cork, to form a floor tile that combines toughness, flexibility, quietness and resiliency. It is highly water-resistant, even immersing it in water will not affect its strength or appearance. It will not wet rot. It is supplied ready-to-lay in 8½" squares, 3/16" thick. While ordinary linoleum paste bonds the tile tightly to properly prepared wood or concrete floors, a special waterproof adhesive is used where high bond strength is required. Maintenance is simple since the tile's smooth, nonporous surface does not catch dirt and can be wiped clean quickly and easily.

Mortar Sealants

One of the more specialized problems in the field of waterproofing is that of sealing the joints between glass blocks, which are, themselves, not porous. Ordinary mortar has been found unsatisfactory because it cannot form a good mechanical bond, and cracks develop from shrinkage in the mortar. Water is absorbed into these openings and when this water freezes, it cracks the glass block.

To overcome this difficulty, a mortar sealant was developed expressly for use with glass blocks. It coats the exterior mortar joints, adheres to the mortar and forms a tight flexible bond to the glass, expanding and contracting with the mortar as well as the glass without rupturing the film. It is of plastic-like consistency and can readily be applied with a caulking gun, or thinned down with suitable solvents for brushing. This sealant remains rubbery and bonds tightly to mortar, glass, tile, brick, metal and wood. It is available in white, and can be furnished in other colors.

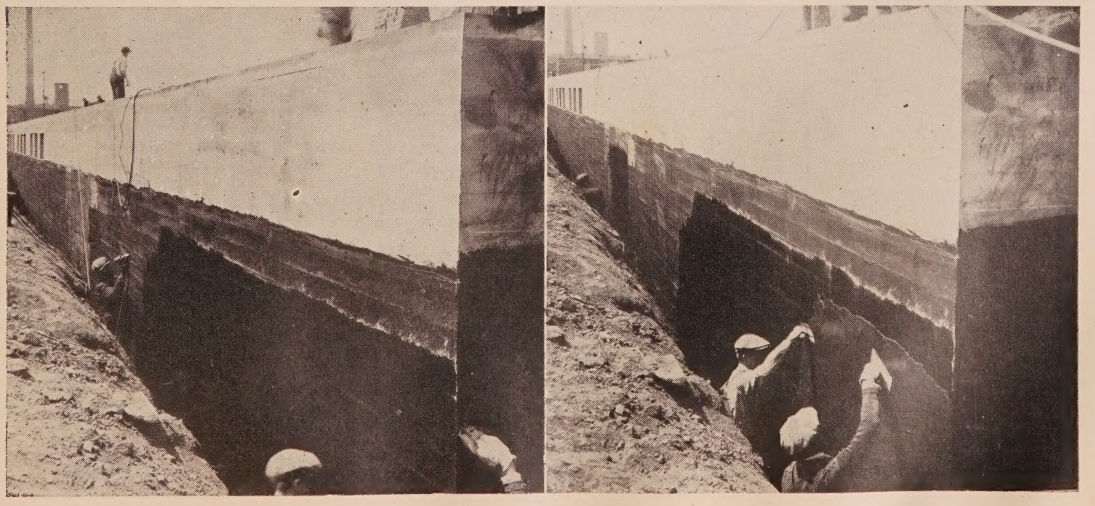
Other Sealants

Other available sealants include: a sealing compound for spaces between wood, around window frames, lavatories, and wall-board installations, and an all-purpose adhesive for binding different materials. Quick to seal and waterproof, this adhesive can be used on tile, metal, linoleum, wood, glass, wallboard, plaster, ceramics, most plastics, plywood, asphalt tile, insulation boards, and a host of other materials.

Conclusion

With so many waterproofing materials to choose from, the theatre operator can easily find one that suits his purpose. The question is no longer "How can I keep the dampness out?" but rather "Which waterproofer fits into my picture best?" Now that needless destruction by moisture can be eliminated easily, effectively and economically, the operator, once his material is selected, can take the offensive against rot, rust, mildew and decay; and in the dry days that follow sing "Moisture, stay 'way from my door."

HYDRALT EMULSION is sprayed on foundation walls below grade, usually followed by an application of asphalt saturated membrane and then a second sprayed coating of emulsion. The protection course is a mastic made by mixing one part of cement with three parts of sand to a stiff mortar, then adding two parts of Hydralt Emulsion and sufficient water to make the desired troweling consistency. Such heavy duty waterproofing usually takes place during new construction, but is possible to apply to old structures. *(Photo courtesy of The Flintkote Company.)*



Fire-Safe Fiberglas Board and Tile

New Incombustible Material Answers the Need for Deadening Sound in All Parts of Theatre

By WILLIS M. REES
Acoustical Specialist
Owens-Corning Fiberglas Corporation
Toledo, O.

BRIEF: ***A theatre may have the best sound system in the world . . . but it cannot function at top efficiency if proper provisions are not made to deaden echoes, vibrations, and other sounds . . . which will prevent the audience from hearing clearly the voices in the picture . . . Acoustics, therefore, should be given priority consideration in new construction or remodeling.***

The combustible characteristics and weight of many rigid acoustical products have compelled theatre operators to turn to plaster compounds and bulk sound-absorbing products . . . although the latter are primarily intended to serve as thermal insulators . . . Unfortunately, however, plaster has required frequent patching and loses some of its absorption qualities with age . . . and bulk materials have proven too heavy to support with ease.

In short, there has been a crying need for an acoustical product which would possess high sound-absorption qualities . . . yet be fire-safe, light in weight, and dimensionally stable . . . The solution to this vexatious acoustical problem seems to have appeared at last with the advent of Fiberglas board and tile . . . which not only provides all the desirable features mentioned above, but is also a good durable thermal insulator as well as a sound deadener.

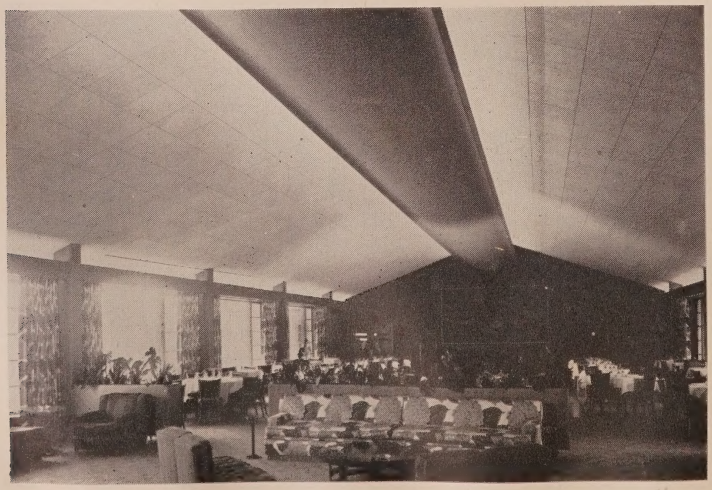
INTRODUCTION

Just how a material absorbs sound is still not fully understood, but it is believed that friction of the pulsating air molecules against the interstices of porous materials transforms sound energy into heat, and that it is in this way that most sound absorption is provided. If this theory is correct, it follows that, within limitations, by increasing the total surface area provided by a material, the noise absorption value can be increased.

Total surface area of a porous fibrous material can be increased by decreasing the diameter of the fibers that make up the material. Further research may demonstrate that acoustical values are functions of fiber diameter, and of the surface area of the fibers. This theory would account for the performance of Fiberglas as an acoustical material. A pound of glass fibers with an average diameter of 5 one-hundred-thousandths (0.00005) of an inch has 36,000 times the surface area of the same amount of glass in the form of a sphere.

All Fiberglas products used for acoustical purposes are made of a basic inorganic material—glass in fiber form. Glass is born of great heat and flame—so intense that sand, limestone and other mineral components are melted and blended in a formula designed to give maximum chemical and physical stability. In the manufacturing process, molten glass is drawn into fine fibers under carefully controlled techniques. When combined with a small percentage of a highly stable binding agent, Fiberglas fibers are compressed and bonded into a board or blanket form. From these forms are made Fiberglas acoustical tile and board and other Fiberglas products employed for sound control.

AN INTERESTING CEILING of Fiberglas tile as found in the lounge of the Brynwood Country Club, Milwaukee, Wisconsin. Applied by mechanical method it produces desired acoustic results and adds beauty.



FIBERGLAS IN THE THEATRE

Not only auditorium acoustical requirements, but also the low noise level requirements in lobbies, lounges, foyers and rest rooms, make acoustical treatments a major consideration in both new theatre construction and remodeling. The combustible nature and/or weight of most rigid acoustical products have forced theatres into the use of plasters and the concealed use of bulk sound-absorbing materials designed primarily for thermal insulation purposes.

Because the new Fiberglas acoustical tile and board are free from the two basic objections to most rigid products—combustibility and excessive weight—they are expected to find wide use in theatres. Designed for good architectural appearance, and painted white for good light diffusions, the Fiberglas products provide a low-cost, light-weight, incombustible ceiling or wall material with high sound-absorbing properties. The board, and plain or perforated tile, can be cemented to a solid backing or mechanically mounted on wood or metal furring strips.

Acoustical Requirements

In determining acoustical requirements of such spaces as auditoriums, it is common practice to consider reverberation at the one frequency of 512 vibrations per second. Spaces requiring critical analysis, in which the acoustical treatment must provide most of the sound absorption, may show excessive reverberation at low frequencies even though conditions may be satisfactory at 512 cycles. Because many Fiberglas products provide exceptionally high absorption at low frequencies, they are particularly well suited for use in radio and television studios and other spaces requiring "straight line" absorption for good results.

Advantages of Fiberglas

The incombustibility of Fiberglas acoustical tile and board shares with high-sound absorption efficiency major credit for the rapidly expanding use of these materials, particularly in places of public assembly where experience has shown that combustible acoustical materials constitute a serious fire hazard.

Both the tile and board are rated "incombustible" when tested according to the exacting procedure specified in Federal Specification SS-A-118a. Sound absorption coefficients for the plain tile

Table I

SOUND ABSORPTION COEFFICIENTS
(Acoustical Materials Ass'n Data)

Thickness	Mounting	COEFFICIENTS 128	256	512	1024	2048	4096	Noise Red. Coef.	Unit Size Tested	Wt. Lbs. per Sq. Ft.	Test No.
¾"	1	.04	.20	.63	.91	.82	.82	.65	12"x12"	.69	A48-99
¾"	7	.21	.50	.91	.99	.86	.80	.80	12"x24"	.62	A48-101
1"	1	.11	.33	.80	.96	.82	.76	.75	12"x12"	.86	A48-100
1"	7	.23	.57	.90	.98	.88	.84	.85	12"x24"	.87	A48-102

Mounting #1—Adhesive Application.
Mounting #7—Mechanical Application.
Official AMA data—1949 Acoustical Materials Association Bulletin, No. XI.

and board are given in Table No. 1. Table No. 2 shows sound absorption coefficients for the perforated tile.

Fiberglas acoustical board is identical to one-inch-thick Fiberglas plain acoustical tile, except for size. The board is made in large sizes for installation convenience. Both tile and board are the lightest-weight mineral-type, fire-safe acoustical materials available. When one inch thick, they weigh less than one pound per square foot, less than three-quarters of a pound per square foot when three-quarters of an inch thick.

They will not warp, buckle, expand or contract. When tested at 95 per cent relative humidity, at 120 degrees Fahrenheit, for a period of 96 hours, no measurable change in dimensions occurred. Moisture absorption was less than one per cent by weight. Occasional wetting due to leaks, with subsequent early drying, will have no effect upon the materials other than a possible discoloration of the surface paint.

The fact that the materials combine high thermal-insulating efficiency with high sound-absorbing efficiency may be a major consideration. The "k" factor of the basic material from which the Fiberglas tile and board are made is 0.24 BTU per inch per hour per square foot per degree Fahrenheit at 75 degrees mean temperature.

Construction Techniques

The combination of incombustibility, light weight and dimensional stability makes Fiberglas tile particularly well adapted to mechanical application systems. Figures 1 to 5 illustrate the use of the Securitee-Standard System. Figures 1 and 2 show details of the simple, suspended type construction. Figures 3, 4, and 5 show mechanical application using the Securitee-Standard System in typical furred constructions.

The Securitee-Limited System, illustrated in Figure 6, substitutes a three-quarter inch standard channel for the special Securitee Box Channel to reduce cost, and is applicable to suspended type construction. Because of the light weight of the Fiberglas tile, a four-foot centering of the channel work is recommended construction. Other mechanical application systems suitable for applying acoustical tile are adaptable to Fiberglas tile.

Typical Installations

Before and during the period of World War II, Fiberglas materials in the forms used for thermal insulation were employed in numerous applications for the control of sound as well as heat. They were installed for acoustical purposes, and in some instances for thermal purposes, also, in the control rooms of Navy ships, in military and naval aircraft, in bomber assembly plants, dynamometer rooms, sound stacks, and motor test stands. They were employed to deaden sound in chambers used for the testing of communications equipment as at Harvard University's Electro-Acoustic Laboratories, and at the New York Navy Yard. They are presently used in the Bell Telephone Laboratories test chamber.

APPLYING FIBERGLAS acoustical tiles by the adhesive method is both easy and simple. Because of its non-combustible nature, low weight, and dimensional stability, it offers a high safety factor. Illustrated below is a detail through the tile showing the application to the ceiling, with any quality adhesive.

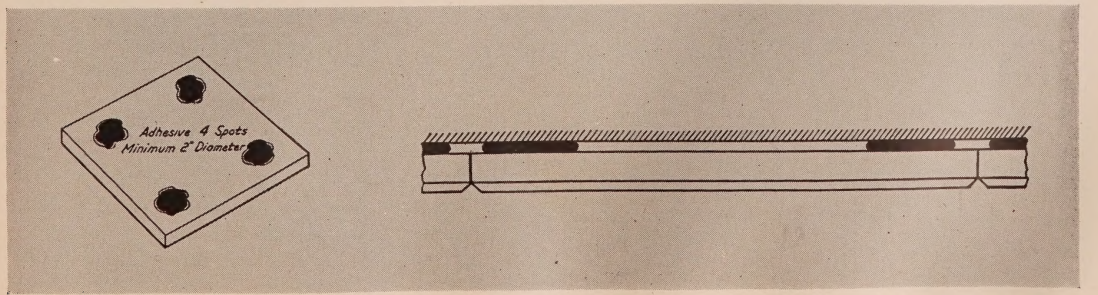


Table II

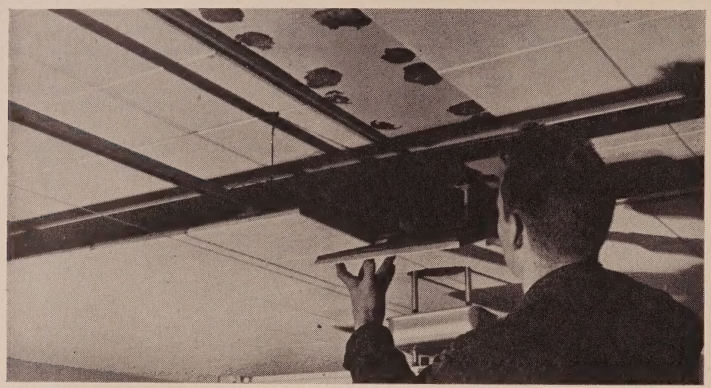
SOUND ABSORPTION COEFFICIENTS
(Acoustical Materials Ass'n Data)

Thick-ness	Mount-ing	COEFFICIENTS 128	256	512	1024	2048	4096	Noise Red. Coef.	Unit Size Tested	Wt. Lbs. per Sq. Ft.	Test No.
¾"	1	.02	.16	.76	.99	.63	.44	.65	12"x12"	.71	A48-104
¾"	7	.16	.47	.98	.83	.64	.46	.75	12"x24"	.68	A48-105

Mounting #1—Adhesive Application.

Mounting #7—Mechanical Application.

Official AMA data—1949 Acoustical Materials Association Bulletin, No. XI.



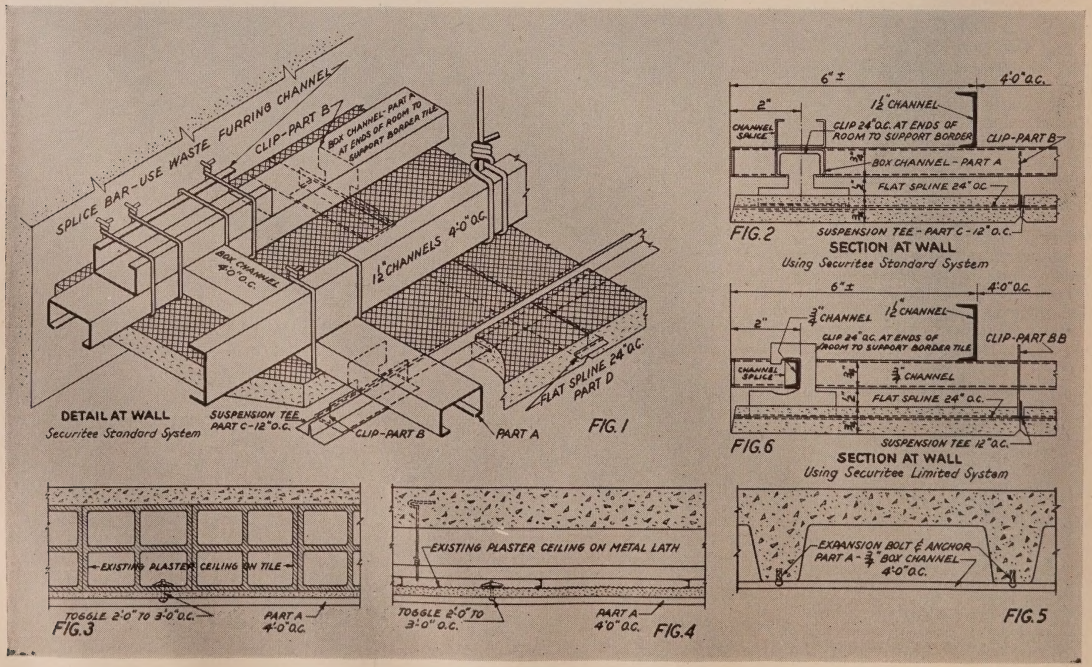
THE MECHANICAL APPLICATION of Fiberglas acoustical tiles is slightly more technical. Figures Nos. 1 to 5 below, illustrate the use of the recommended Securitee-Standard System, with details of the simple suspended type and the furred construction type. Figure 6 is the Securitee-Limited System.

Fiberglas products primarly designed for thermal insulation purposes are now widely used for acoustical purposes in theatres and theatre-type applications requiring fire-safe, high sound-absorption materials at low cost, where appearance is not a primary factor or where the material is wholly or partially concealed. There will undoubtedly continue to be many such applications to which Fiberglas products will be well adapted.

An incombustible acoustical ceiling of Fiberglas PF thermal insulation board, supported by aluminum extruded "T" sections, is one of the new features used in the recently constructed Brooks Recreation Center, Raleigh, N.C. The building, which is the largest of its kind between the District of Columbia and Florida, is of steel and masonry construction with a glass and aluminum front. There are now 24 bowling alleys in operation, and there is room for six more. Opposite the alleys there is a roller skating rink with sufficient room for 1,000 skaters.

From the overhead roof structural members, the contractor dropped 14-gauge wire of proper lengths. The wires were inserted and tied through holes which were hand-punched at intervals in the stems of the extruded aluminum "T" sections. The sections were hung in one direction only, 24 inches on center, and laterally braced with spacer bars. The PF board was spray painted and then laid on the flanges of the suspended "T's" to form the ceiling proper. The unsanded, painted board presents an unusual and distinctive appearance and provides excellent acoustical properties.

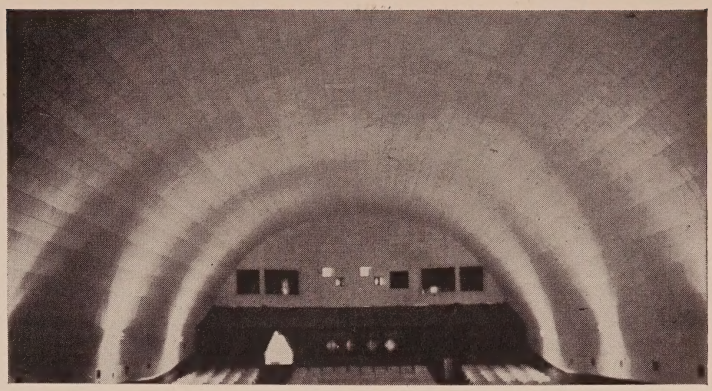
PF board has found widespread use on the West Coast for acoustical treatments

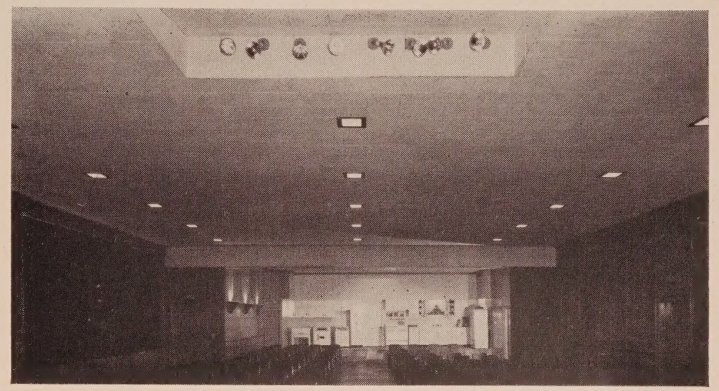


during the last three years. The first important and highly successful job was the Fox West Coast prefabricated theatre in Long Beach, Calif., in which the PF was applied on walls and ceilings in pre-formed, expanded metal pans. The results were so satisfactory that the Fox management became interested in PF materials for other theatres. The Fox management has refinished about eight buildings to date with this treatment. About twenty other theatres in the Los Angeles area have been treated acoustically with PF. These theatres required from 2,000 square feet to 8,000 square feet each.

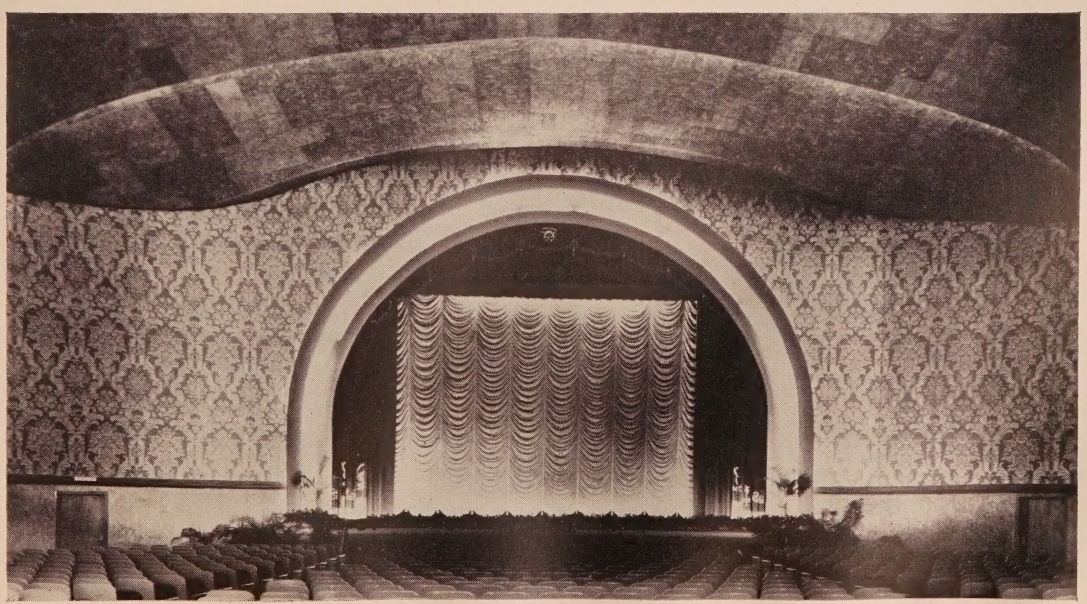
In old theatres, the PF has been installed with regular acoustical adhesive over old acoustical plaster and over plaster walls after fire-safety requirements had necessitated removal of original combustible acoustical tile. The growing practice of selling popcorn and other confections in theatres has made vermin a major problem. One advantage of using large sheets of PF is that it can be tightly cemented against old plaster, eliminating air spaces that are nesting places for vermin.

Fiberglas Aerocor is also being used as acoustical material in West Coast theatres. It is cemented to the walls behind the theatre screen and behind draperies wherever possible. In numerous installations, the draperies are decorative fabrics woven of incombustible Fiberglas yarns. Thus, their use is in keeping with the emphasis being placed on fire-safety. These Fiberglas materials have made it possible for the theatre owner to bring his building up to date acoustically by overcoming the deficiencies of acoustical plaster which has hardened and lost its effectiveness. He has been able to adapt his theatre to the requirements of new sound equipment and fire safety at a minimum expense.





TOP: THE GULF COAST, SAINT PETERSBURG, FLORIDA, is constructed of Quonset arches and boasts a Fiberglas acoustical tile ceiling. CENTER: The auditorium of McGregor's, Inc., of Memphis, Tennessee, is made acoustically good through Fiberglas tiles. BOTTOM: The Teatro Aguilera, Havana, Cuba, uses a Fiberglas PF board ceiling; and sidewalk of Fiberglas Aerocor covered by Fiberglas print fabrics.



The Potential Uses of Monastral Pigments

The Fastness and Durability of the Colors Of Value in Constructions and Maintenance

Great progress has been made in producing insoluble pigments to serve industry. The introduction of Monastral pigments in the United States market by E. I. duPont deNemours and Company fulfills stringent requirements of many industries which demand high durability and fastness in color.

Development work, on manufacturing processes and methods of utilizing Monastral pigments, has been carried on by duPont since 1934. Sufficient information had been gathered by 1940 to design a plant but the outbreak of war prevented its erection at that time. Limited production, primarily for war purposes, was achieved, but only in temporary facilities under makeshift conditions.

DuPont's expanded facilities, when completed, will supply adequate quantities of the pigments for new construction and extensive repair and renovation programs. Sufficient additional quantities of the pigments will be produced to supply many of the other important uses which have been developed.

Critical materials, such as chromium and lead, widely used in manufacturing green pigments of lower durability, will be released for other purposes through the increased production of Monastral green which does not require these materials.

THE PIGMENTS

The Monastral pigments include two brilliant blues and a brilliant green, sold in many physical forms to meet specific application conditions. Due to their high resistance to fading by sunlight, acids, alkalis, and other conditions destructive to colors, the organic Monastral pigments are in great demand, especially by the manufacturers of building materials.

One of the virtues of the Monastral Blue B and Green G pigments is the fact that their full and pastel shades are remarkably similar, covering a narrow color range. Of special interest is their resistance toward most of the things that destroy other colors. They have a high degree of fastness to light, acids, and alkalis such as lime. Moreover, they are insoluble in oil, spirit, and nitrocellulose solvents and will withstand temperatures up to 390 degrees Fahrenheit.

FIELDS OF USAGE

These pigments can be applied to nearly everything needing color and color fastness and durability, and theatres require many of these materials in construction, maintenance and everyday business.

A major portion of duPont production is used in materials for building construction and finishing, such as in roofing granules for colored composition shingles, wallpaper, linoleum, interior and exterior oil, and cold-water paints, enamels and lacquers, as well as for drapery and other decorative fabrics. Because of their high durability, use of these pigments adds substantially to the life of essential materials used by the builder, and contributes to economies in construction.

Paint, Lacquer, Enamels

The paint industry has long felt the need for fine blue and green pigments possessing excellent fastness. Paint is not only used as a protective covering but also needs attractiveness and eye-appeal. Consideration in the selection of a pigment for paints, lacquers and enamels must include such factors as adaptability, ease of application, wettability, texture and color strength.

The Monastral pigments can be particularly recommended for the manufacture of oil paints. In the light and medium shades of bright blue and green exterior trims especially, the Monastral pigments have proven themselves very superior in durability.

When used in nitrocellulose lacquers, the brilliance of the Monastral pigments in the presence of acids and alkalis is a decided advantage.

Quick-drying finishes of synthetic origin have become increasingly important. Here again, the Monastral pigments are effective in being extremely resistant to light and heat. They may be used in the coloring of tranparent lacquers as well.

Adaptability of pale shades which predominate in this type because of color purity and light fastness are characteristics of the Monastrals. These colors are resistant to the alkaline conditions in the paints themselves and in the walls.

Paper

In the dyeing of certain types of paper the selection of the correct dyes depends upon the ultimate use of the paper. Monastral pigments, manufactured in highly dispersed powder form and also in paste, may be added to the pulp in the beater before the paper is formed, yielding exceptionally bright shades.

These pigments are especially suitable for cover stock or any other stock where particular color permancy is desired.

Monastral pigments are also applicable to coated paper. By using these pigments in varying strengths a wide range of shades is obtainable.

The use of artistic wallpapers in modern decoration has emphasized the need for color fastness and resistance to the action of lime in freshly plastered walls and to sunlight. This is particularly important in the case of bright and pastel shades as well as illustrative designs.

Some pigments have been satisfactory in heavy shades, but when used in pastels they fade out quite rapidly. Some have a tendency to darken while other migrate, and it has been difficult to secure uniformity of shade. A light shade of Monastral pigment when submitted to a Fade-Ometer exposure of more than 200 hours shows practically no change. The wallpaper trade test is 48 hours.

Cements

The increasing use of color in interior decoration has created a definite demand for a fast-color base in cement building materials and cement composition floorings that are used indoors. In addition to fastness, the Monastral pigments combine readily with other pigments of similar characteristics.

Linoleum

Practical tests have demonstrated that the Monastral pigments are excellent in linoleum where both heavy shades and graded light shades are desired. They are also extremely resistant to the high temperatures, which in linoleum processing, frequently run up to 250 degrees Fahrenheit. Linoleum floorings are repeatedly washed and scrubbed with strongly alkaline soaps that ordinarily have an adverse effect upon ordinary color pigments. There was no blue or green of comparable brilliance in a fast color which could stand soaps and alkalis until the Monastral pigments came along.

Textiles

The Monastral pigments have proven themselves for certain types of textile printing. Unlike other pigments, they are not sensitive to oxidizing and reducing agents. They can also be used as a throwster's color.

Coated textile fabrics are extensively used for book covers and bindings, washable tablecovers and many other commercial purposes. They are of particular interest as a coloring matter for washable tablecovers because they are fast to alkaline scouring powders, soaps, ammonia, and also to fruit-juice stains.

Rubber

Monastral pigments are well adapted for use in rubber goods. The color is fast to all conditions of vulcanization, as well as to light. They are insoluble in rubber, hydrocarbon solvents, water, soapy water, and steam. They will neither migrate into adjoining stocks nor stain soapstone, wrappers or other accessory equipment. They are unaffected by the acidity or the alkalinity of the batch or of the lubricant and, consequently, are especially suitable for coloring sponge rubber. There are special brands of Monastrals very controlled as to content of copper and manganese which are available for rubber coloration. Only these special types should be used in rubber.

Build it better, faster, more economically with RILCO

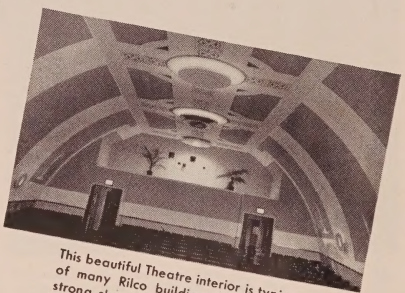
GLUED LAMINATED WOOD ARCHES AND TRUSSES

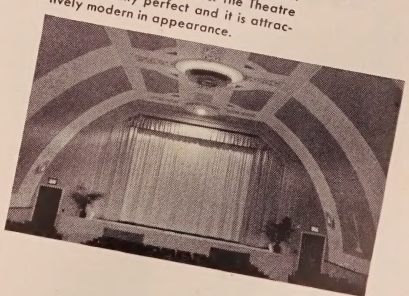
Profitable theatre operation directs more and more builders toward the new economies of clear-span construction with Rilco glued laminated wood trusses and framing members. Used for the first time on a large scale during the war, Rilco Construction offers big savings in time, labor and materials in Theatre and Community buildings.

Available in pre-engineered spans of any required width, Rilco arches and trusses lend themselves to a variety of attractive modern Theatre designs. Both arch ceilings and flat ceilings in Rilco buildings provide good acoustical properties and exceptionally pleasing interior treatments are achieved.

Construction costs can be cut by spacing Rilco trusses, arches or rafters properly to permit the application of sheathing directly to them, thereby eliminating the need for roof joists or purlins. These framing members are delivered to the job site pre-fabricated and engineered, ready for quick and easy erection.

Investigate the many advantages and economies of Rilco construction before you build. Utilize wood, the most dependable building material, in its most modern form—the Rilco glued laminated arch. Let us tell you more about it before you build.





This beautiful Theatre interior is typical of many Rilco buildings framed with strong clear-span arches. The Theatre is acoustically perfect and it is attractively modern in appearance.

RILCO *Laminated* PRODUCTS, INC.

A WEYERHAEUSER COMPANY

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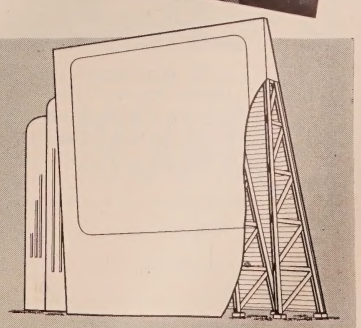
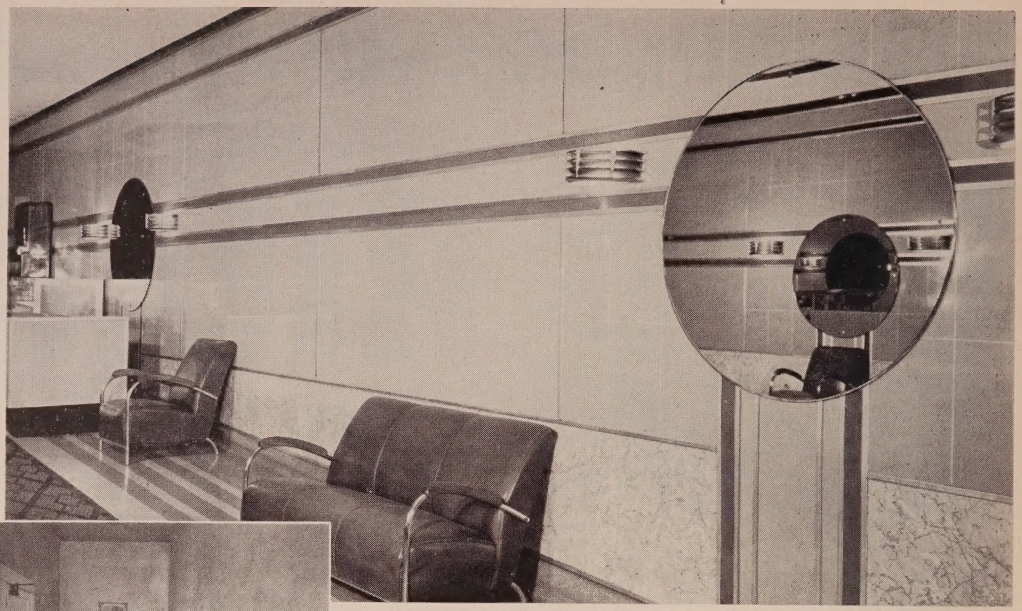
604 BROOKS BUILDING • WILKES-BARRE, PA.

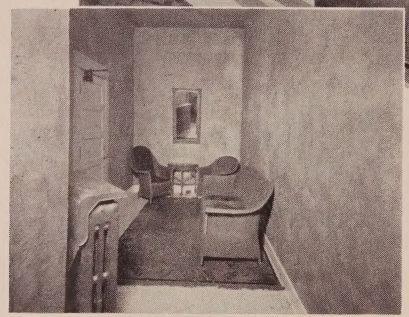
BUILD OUTDOOR SCREENS FASTER, CHEAPER

● Here's all you do. Bolt six glued laminated Rilco triangular trusses to concrete piers and sheathe them over. That's all! Rilco trusses are pre-fabricated and engineered to do the job. There's no time lost in complicated fitting. Trusses are complete, ready to put up when you get them. All bolts and angles and split ring connectors are furnished without extra cost. Space enclosed at base of screen is ideal for refreshment or ticket booths, lockers, office or storage. Write RILCO for complete money-saving details on outdoor screens.





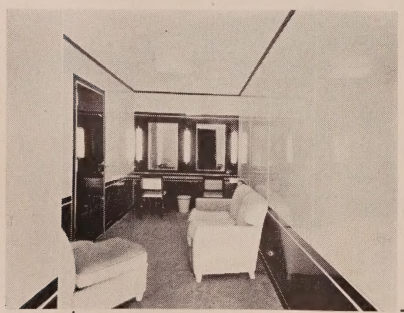
Modern foyer of Emery Theatre, Reading, Ohio, uses Rose de Brignoles Marble Pattern Marlite wainscot, plain and scored Marlite upper walls with two feature strips of Persian Red Marlite.



BEFORE ◀

AFTER ▶

Spotless, sparkling Marlite plastic-finished wall and ceiling panels quickly transformed this uninviting ladies' lounge in the Hippodrome Theatre, Marietta, Ohio, into a smart, pleasing interior—at amazing low cost!



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DRIVE-IN THEATRES

1950-51

Second Annual Drive-In Audience Survey

Detailed Poll of Typical Metropolitan Area Group Reveals Basic Traits of All Outdoor Theatre-goers

By Dr. Rodney F. Luther
Film Merchandising Consultant and Associate Professor of Marketing Los Angeles State College

Drive-in theatre operation in the United States has, by the 1950-51 season, progressed to the point where significant trends can be segregated, verified and analyzed. Although still in the exciting process of "growing up," drive-in exhibition now represents such an important share of theatre business, and such a large investment (between 100 and 200 million dollars), that the exhibitor and the entire motion picture industry have found it wise from time to time to pause and take stock of themselves.

Drive-in theatres, over 2,000 strong, now represent about 15% of all theatres, and account for approximately 20% of all grosses. As such, drive-ins must be managed intelligently and with regard both to the interests of the public and the farsighted businessmen who have invested in these theatres. To insure long and continued success in a new era of competition for the public's interest, the drive-in exhibitor cannot neglect to recognize the intrinsic character of his audience, its true likes and dislikes, habits and preferences.

By pausing to examine his theatre and its operating, booking, and advertising policies from an entirely new standpoint, that of the typical audience, the drive-in exhibitor will not only be following the practice of a large segment of profitable U. S. industry, but also will obtain both a helpful index by which to measure his own operations and an objective appraisal of the strong and weak points —the potentialities and shortcomings of drive-in theatres in general.

As a result of the tremendous interest generated by the 1949 drive-in survey, conducted by the author and published in the 1949-50 Edition of THEATRE CATALOG, a similar, but even more comprehensive, drive-in audience survey was conducted during July and August of 1950, and is herein published exclusively by THEATRE CATALOG.

The Minneapolis-St. Paul marketing area, commonly called the Twin Cities and used by many national organizations for sampling and market research, was again selected for study in order to provide reliable and comparable data. This metropolitan area of over one million population is served by six suburban, subsequent-run drive-in theatres. As a result of the active cooperation of these theatres, North Central Allied, and the University of Minnesota School of Business Administration's tabulation laboratory, which processed and tabulated the questionnaires, it is possible to present to the industry the most comprehensive such survey ever conducted.

The drive-in patrons in over 2,000 cars, selected at random from all theatres, on all days of the week, all weeks of the month, and for all performances, were questioned on 18 key points which were carefully selected after discussions with theatre executives, research groups, and pre-tests. Thus, while the findings encompass the actual responses of some 5,000 adults, it is possible, because of the sampling techniques used, to assume that the same typical responses would be obtained from a considerably larger group under equal conditions.

The findings and their significance have been arranged under five general headings: per car audience; source of patronage; frequency of patronage; product preferences; and consumer opinion. The direct findings in each of these fields will be presented as briefly as possible, and will be followed in each case by an analysis of their significance. Wherever comparable, the 1950 figures will be immediately followed, **in parentheses ( ), by the 1949 figures.**

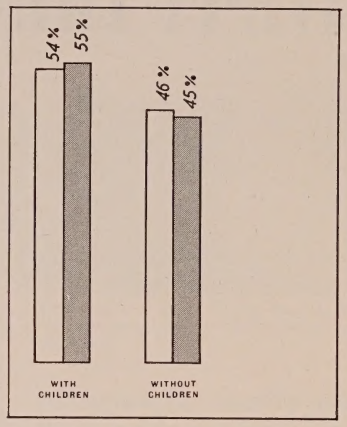


FIGURE 1. Average number of cars with children and average number without children in 1950 (open graph) as contrasted to 1949 (shaded graph).

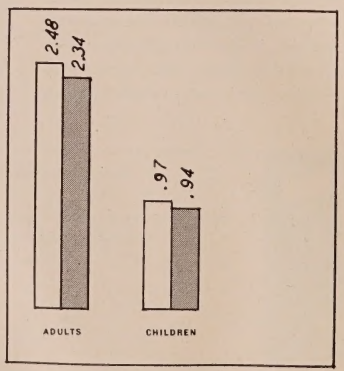


FIGURE 2. Average number of adults per car and average number of children per car in 1950 (open graph) as contrasted to 1949 (shaded graph).

BRIEF: ***Published as a natural sequel . . . to the author's first authoritative survey on the habits and tastes of a typical metropolitan drive-in audience . . . which appeared on pp. 196-200 of the 1949-50 Edition of THEATRE CATALOG . . . this second analysis of the Minneapolis-St. Paul marketing area again reveals who the drive-in patrons are . . . and the importance of their characteristics in setting policies for outdoor exhibitors to follow.***

The findings . . . painstakingly compiled from many hours of scientific polling . . . are presented first under the five general categories . . . per car audience, source of patronage . . . frequency of patronage . . . product preferences . . . and consumer opinion . . . into which the survey has been subdivided . . . These facts and figures are followed by an expert analysis of their significance in each case . . . Throughout the text . . . wherever feasible . . . the findings and trends apparent in this 1950 survey are compared . . . and constrasted . . . to those found in the 1949 poll.

It seems quite reasonable to assume . . . under relatively equal conditions . . . that the feature traits of the particular audience discussed would probably hold true for those in many other drive-in drawing areas throughout the country . . . since people are basically the same everywhere . . . The results of this survey are . . . therefore . . . more than worth the attention of every drive-in showman . . . from Maine to Florida and California.

PER CAR AUDIENCE

Findings

1. 54% (55%) of the cars contained children.
2. 46% (45%) contained only "adults" (12 years of age or older).
3. There were 2.48 (2.34) adults per car.
4. There were .97 (.94) children per car.
5. 24.2% (25%) **of all cars** contained one child.
6. 19.5% (19%) contained two children.
7. 7.3% (7.0%) contained three children.
8. 2.3% (2.0%) contained four children.

9. 0.4% (1.5%) contained five children.
10. 0.1% (0.5%) contained six children.
11. Considering only the 54% (55%) of the cars containing children, cars with children averaged 1.8 (1.77) children per car.
12. From the standpoint of time of performance:
    a. For first performances, on weekdays (Monday through Thursday), there were 0.9 (1.2) children in all cars.
    b. For second performances, on weekdays, there were .52 (.57) children in every car.
    c. For first performances, on weekends (Friday through Sunday), there were 1.2 (1.2) children per car.
    d. For second performances, on weekends, there were .80 (.57) children per car.
    e. For first performances, on weekdays, 49% of the cars contained children.
    f. For second performances, on weekdays, 31% of the cars contained children.
    g. For first performances, on weekends, 63% of the cars contained children.
    h. For second performances, on weekends, 44% of the cars contained children.
13. 2% (3.3%) **of all cars** contained only one adult.
14. 67% (74%) contained two adults.
15. 14% (10%) contained three adults.
16. 14% (10.5%) contained four adults.
17. 2% (1.7%) contained five adults.
18. .60% (.50%) contained six adults.
19. From the standpoint of time of performance:
    a. For first performance, weekdays, there were 2.46 (2.2) adults **per car.**
    b. For second performance, weekdays, there were 2.65 (2.47) adults.
    c. For first performance, weekends, there were 2.40 (2.27) adults.
    d. For second performance, weekends, there were 2.60 (2.47) adults.
20. 19.3% (10.4%) **of all adults** were in the 12-20 age group.
21. 45.1% (48.2%) were in the 21-30 age group.
22. 22.3% (26.7%) were in the 31-40 age group.
23. 8.4% (9.7%) were in the 41-50 age group.
24. 3.2% (4.4%) were in the 51-60 age group.
25. 1.7% (0.6%) were in the over 60 age group.
26. From the standpoint of time of performance:

Age Group	1st Perf. Week-days	2nd Perf. Week-days	1st Perf. Week-ends	2nd Perf. Week-ends
12-20	25.3%	41.0%	11.2%	20.9%
21-30	41.6	34.2	43.4	52.5
31-40	21.6	18.0	25.3	18.2
41-50	6.5	2.2	9.9	5.7
51-60	3.9	3.2	7.3	2.7
Over 60	1.1	1.4	2.9	—

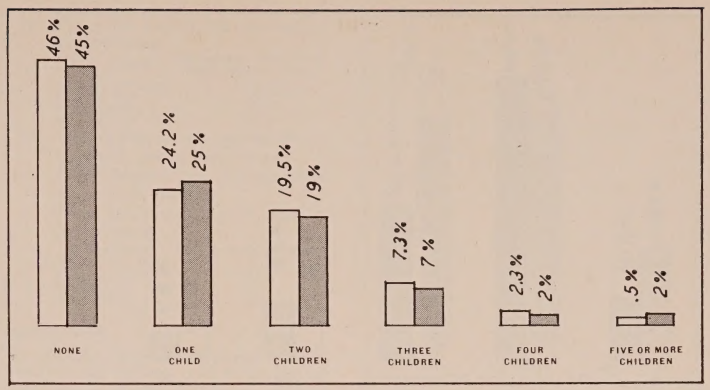


FIGURE 3. Analysis of child patronage during 1950 (open graph) as contrasted to 1949 (shaded graph).

Significance

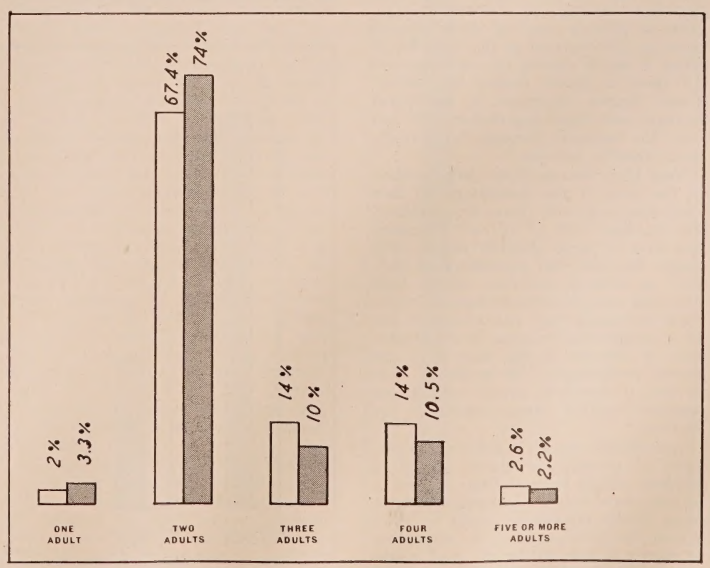
The average total audience per car increased from 3.28 persons in 1949 to 3.45 persons in 1950, an increase of over 5% in per car patronage. This 1950 per car audience, composed of 2.48 adults and .97 children per car, again indicates the strong element of "family" attendance at drive-in theatres. However, averages in this case can be misleading.

The typical drive-in audience is still composed of two distinct groups of patrons: those with and without children. Numerically, the latter group is almost as large as the group with children. The 54% of cars containing children averaged 1.8 children per car, and undoubtedly represent a logical, loyal backbone of patronage for the drive-in theatre, come what may. Many of them represent a part of the potential motion picture audience which the conventional theatre had "lost," or could not attract.

Moreover, from the standpoint of sales promotion, there remains a large reservoir of such patrons (with children) among whom sales appeals will continue to be effective. A substantial proportion of these patrons will represent a net addition to the total motion picture audience.

It should be recognized, however, that drive-in theatres are gradually attracting more and more patrons because of advantages which may not be related to the ease of bringing or caring for children. The ease and convenience of attending a drive-in is certainly not an advantage limited only to those with children, the aged, or the handicapped. Both wage earners and white-collar workers, as well as persons in all strata of economic and social life, can appreciate the drive-in theatre's wide variety of convenient services and attractions, and the special sense of informality that is character-

FIGURE 4. Analysis of adult patronage during 1950 (open graph) as contrasted to 1949 (shaded graph).



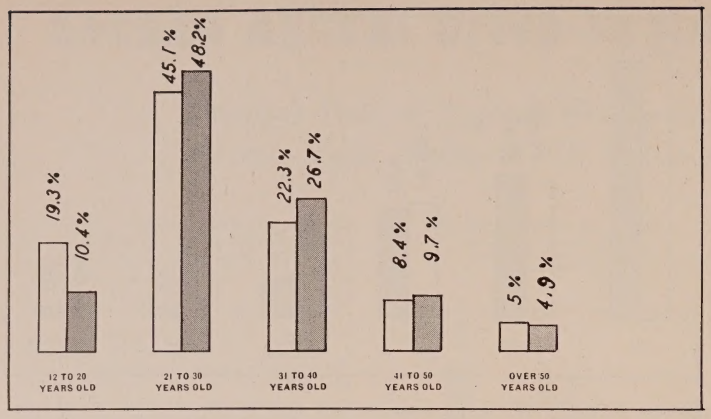


FIGURE 5. Analysis of adults' age groups in 1950 (open graph) as contrasted to 1949 (shaded graph).

istic of the typical drive-in and its audience.

As these theatres continue to attract patrons without children, due to a growing appreciation of the appeals listed above and of the improving run and clearance status of drive-ins, they inevitably will attract patrons away from conventional theatres—at least to some degree. For that matter, only 30% of the patrons interviewed in 1949, and 28.5% of the patrons in 1950, reported that they attend drive-ins exclusively during the summer, but, at the same time, the average patron did see 58% of his movies at drive-ins during 1949, and 62.5% during the summer of 1950.

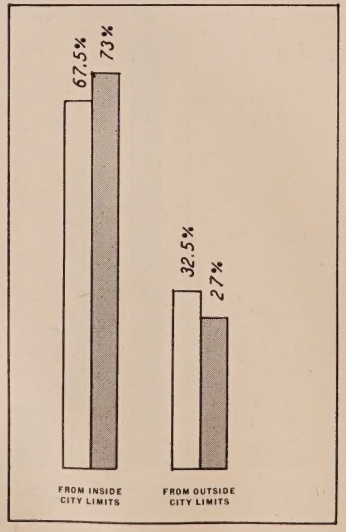
However, just as the drive-in theatre may be expected to gain a share of the conventional theatre's audience, especially during the summer, there is also clear-cut evidence that the drive-in stimulates motion picture attendance among all its patrons, a trend from which the conventional theatre stands to benefit, especially during the winter months. Drive-in patrons reported movie attendance (at all theatres) at the rate of 5.21 times a month during the summer, and 3.9 times a month during the winter. These figures represent a significant increase over those reported in 1949 and over the national average for conventional theatre patrons.

Very little change from 1949 occurred in the case of the percentage of cars containing one, two, three, etc., children. For instance, 51% of all cars contained one, two, or three children during both years. However, the attendance of children at drive-in theatres during both first and second performances on weekdays decreased, but was accounted for by a proportional increase in the attendance of children during both first and second performances on weekends. This is true, it should be noted, even during summer months when school is no problem.

Accordingly, booking policies for pictures of potential or known appeal to children might suggest that if such a picture were run on a weekend, maximum family attendance would be stimulated. On the other hand, the scheduling of such a picture during the week might help to "beef up" an ordinarily poor night or nights, especially if it is well-advertised and accompanied by a number of cartoons.

With regard to adult patronage per car, two significant changes took place. First, the number of adults per car increased from approximately two and one-third to two and a half between 1949 and 1950. Second, the average age of the adult patron declined somewhat. The first change, an increase in the average number of adults per car, resulted almost entirely from an increase in the number of cars containing either three or four adults. Of course, the number of adults reaches a maximum (per car) during second or late performances, at the same time that the number of children reaches a minimum. The key to this increase in the average number of adults is indicated by a comparative study of the age groups of adult patrons.

FIGURE 6. Analysis of source of patronage from inside the neighboring city and from the surrounding areas during 1950 (open graph) as contrasted to same neighborhood in 1949 (shaded graph).



It can be seen that the decreased average age level resulted almost entirely from the increased number of cars containing "adults" in the 12 through 20 age group, although the bulk of the increase came from those in the upper third of this category. Actually, there is little evidence to indicate that the absolute numbers of patrons in the other age groups decreased; rather, there was an absolute increase in the number of persons in the 17-20 age group. Many of them attend in groups of three or four to a car.

In this connection, it is interesting to study the time of performance data in finding No. 26 above. There it may be seen that "older" patrons, especially those above age 30, do not attend second or late performances to nearly the extent that they attend early evening or first performances. This is even true of those in the 21-30 age group during the week. Therefore, the rather astonishing figure of 41% (of all adult patrons during weekday second performances being in the 12-20 age group) must be considered in its true light.

A relatively small number of persons aged 17 through 20 may bulk large percentage-wise in any group or in any theatre where there are not large numbers of older persons. Lest some hasty critic or moralist still miss the point, let him be assured by any drive-in exhibitor or competent observer that weekday second performances at drive-ins are not attended by howling masses of teenagers (or of any age group, for that matter) who ought to be home in bed.

It is true, however, that drive-in theatres are gaining a larger share of the younger movie-going public, very possibly in direct proportion to their success in obtaining newer pictures. Furthermore, it is probably true that this increased attendance has been attained to some extent at the exepense of the conventional theatre. However, it is also true that the attendance, age, and frequency data indicate that drive-in theatres have stimulated movie attendance in general.

SOURCE OF PATRONAGE

Findings

1. 32.5% (27%) **of all cars** came from outside the corporate cities' limits.
2. 67.5% (73%) came from within the cities' limits.
3. From the standpoint of time of performance:

Time of Perf.	Cars from Within Cities' Limits	Cars from Outside Cities' Limits
Weekday 1st Perf.	76%	24%
Weekday 2nd "	77	22
Weekend 1st "	64	36
Weekend 2nd "	62	38

4. The average patron drove 8.8 (7.4) miles in order to get to the drive-in theatre where he or she was questioned.
5. From the standpoint of time of performance:

Time of Perf.	Distance to Drive-In
Weekday 1st Perf.	7.5 miles
Weekday 2nd "	8.6 "
Weekend 1st "	8.9 "
Weekend 2nd "	9.2 "

6. 28.5% (30%) of all patrons attended the movies exclusively at drive-ins during the summer.

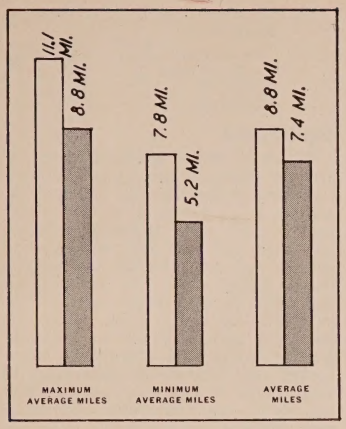


FIGURE 7. Average traveling distances in miles traveled from the patron's home regardless of direction during 1950 (open graph) as contrasted to the preceding 1949 (shaded graph).

7. From the standpoint of time of performance:

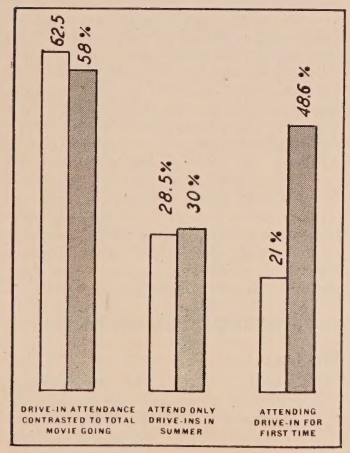
Time of Perf.	Patrons Who Attend Only Drive-Ins During Summer
Weekday 1st Perf.	31.7%
Weekday 2nd "	27.3
Weekend 1st "	30.2
Weekend 2nd "	25.7

8. 51% (42%) **of all patrons** reported that they attend drive-ins "most often."
9. 35% (43%) reported that they attend neighborhood theatres "most often."
10. 14% (15%) reported that they attend "loop," first run theatres "most often."
11. From the standpoint of time of performance:

Time of Perf.	Drive-In	Neighborhood	"Loop" 1st Run
Weekday 1st Perf.	57.2%	28.5%	17.0%
Weekday 2nd "	49.3	39.9	10.8
Weekend 1st "	53.4	34.2	11.9
Weekend 2nd "	43.6	39.0	17.4

12. 62.5% (58%) of the average patron's total movie attendance was at drive-in theatres.

FIGURE 8. Series of attendance analysis of the patrons studied during 1950 (open graph) as contrasted to the preceding 1949 (shaded graph).



13. From the standpoint of time of performance:

Time of Perf.	Percentage of Drive-In Attendance to Total
Weekday 1st Perf.	65.8%
Weekday 2nd "	49.0
Weekend 1st "	64.4
Weekend 2nd "	52.7

14. 18% (3.2%) **of all patrons** had a television set in their homes.
15. 82% (96.8%) had no television set in their homes.
16. From the standpoint of time of performance:

Time of Perf.	Patrons with Television
Weekday 1st Perf.	18.1%
Weekday 2nd "	22.8
Weekend 1st "	17.3
Weekend 2nd "	20.5

Significance

A further increase occurred in the already great distance which the typical patron is apparently willing to drive to attend a drive-in theatre. This distance, 8.8 miles (7.4), indicates the strong attraction which drive-ins represent to their patrons—patrons who in most cases could attend one or more conventional theatres closer to their homes. As was true in 1949, weekday first-performance patrons do not come from as far away as do most weekend and second-performance patrons. It would appear, however, that a significant share of all patrons represents the non-conventional theatre-going public, a fact indicated by the data regarding age, family status, attendance, and theatre and product preference.

The data concerning attendance originating from within and without the cities' limits indicate that suburban and rural patrons from outside the cities' limits attend drive-in theatres particularly on weekends, a course of action which is logical in view of the time and distance factors. As a partial result, average distances travelled are greatest for weekend performances, although it can also be expected that patrons from within the cities are willing to drive further during weekends when the time, work, and school factors are not so important.

While there probably has been no actual decrease in the numbers of patrons who attend drive-ins exclusively during the summer, there has been a small decrease percentage-wise, from 30% of all patrons in 1949 to 28.5% in 1950. As might be expected, such patrons are predominant during first performances when family patronage is relatively great. In a further effort to uncover evidence regarding the sharing of patronage between conventional and drive-in theatres, patrons were later asked which type of theatre they attend "most often." In reply, 51% (41.8%) of all patrons named drive-in theatres. Accordingly, neighborhood theatres dropped to 35% (42.8%), and "loop," first-run theatres to 14% (15.4%). As a result of the comparative gain made by drive-in theatres, approximately 62.5% (58%) of the average patron's total movie attendance during the summer took place at drive-in theatres.

Although it appears that neighborhood theatres lost somewhat more patronage to drive-in theatres than did "loop," first-run theatres, the time of performance data indicate that the opposite is more nearly the truth in the case of weekday

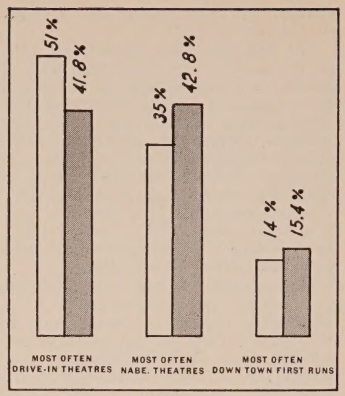
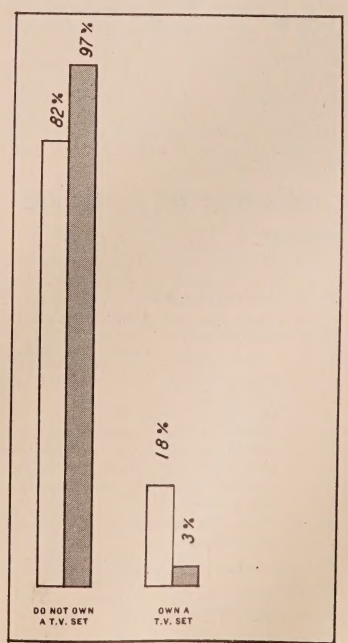


FIGURE 9. Analysis of type of theatres "most often" attended by the drive-in patrons studied in 1950 (open graph) as contrasted to 1949.

second-performance patrons and weekend first-performance patrons. The explanation for this may lie in part in the defection of some youthful patrons and some family groups who previously attended "loop," first-run theatres during such periods.

However, the usually reliable data regarding percentage of drive-in attendance to total attendance permit the general conclusion to be drawn that first-performance patrons, whether found at drive-ins on weekdays or weekends, are measurably more faithful outdoor theatre patrons than are those found attending second performances. The least

FIGURE 10. Relationship of television sets owned by the drive-in patrons studied during 1950 (open graph) as contrasted to 1949 (shaded graph).



faithful are those who attend weekday second performances.

The findings which indicate that 18% of all patrons have television in their homes is evidence both of the rapid development of the popularity of this entertainment medium, and of the considerable degree of immunity which drive-in theatres enjoy in relation to television. There seems little reason to doubt that whatever degree of immunity to television competition drive-ins have is a direct result of the wide and different varieties of entertainment and services which drive-ins can offer.

Conventional theatre exhibitors, by comparison, are now engaged in a tremendous struggle in their efforts to differentiate their product offerings and services from those available via television. Indeed, such possibilities as tridimensional projection, larger screens, more color film, etc., should be carefully investigated without delay. Fortunately, as far as drive-in theatres go, the possibilities for experimentation and varied services are almost endless.

While the precise drawing power of such things as pony rides, picnic areas, car washing, bingo, laundry service, bottle-warming services, merry-go-rounds, refreshment facilities, vaudeville, or dance floors has not been measured, it is obvious that some of these possibilities, where intelligently used and when considered together with the inherent character and convenience of drive-ins, will permit drive-in exhibitors to offer entertainment patterns which will never be available to either television or to conventional theatres.

Some showmen, perhaps exemplified by veteran theatre executive A. J. Balaban, predict the rapid development of "super" drive-ins, or entertainment centers, which would take the form of the present drive-in theatre, but which would offer television shows, dancing, eating facilities, and possibly four different types of motion picture entertainment: a newsreel theatre; an "art" or foreign picture theatre; a first-run theatre; and a combination motion picture-vaudeville theatre. Such a possibility helps to illustrate the innovations which drive-ins can marshal in order to compete with commercial television.

FREQUENCY OF PATRONAGE

Findings

1. 21% (48.6%) of all patrons had not attended any drive-in theatre previous to 1950.
2. From the standpoint of time of performance:

Time of Perf.	Patrons not Attending before 1950
Weekday 1st Perf.	17.7%
Weekday 2nd "	23.1
Weekend 1st "	19.8
Weekend 2nd "	24.5

3. Total average attendance per month at all types of theatres was 5.21 (4.3) times during the summer, 3.9 (3.1) times during the winter.
4. From the standpoint of time of performance:

Time of Perf.	Summer Monthly Average	Winter Monthly Average
Weekday 1st Perf.	5.14 times	4.1 times
Weekday 2nd "	5.22 "	4.1 "
Weekend 1st "	5.11 "	3.1 "
Weekend 2nd "	5.96 "	4.2 "

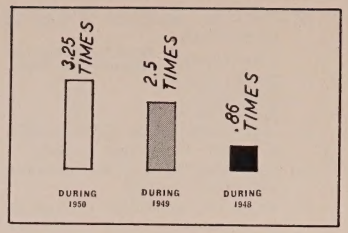


FIGURE 11. Analysis of average-attendance-per-month at drive-in theatres by the patrons studied during 1950 (open graph) as contrasted to 1949 (shaded graph) and to 1948 (solid graph).

5. Average attendance per month at drive-ins was 3.25 times during 1950, 2.5 times during 1949, and .86 times during 1948.
6. From the standpoint of time of performance:

Time of Perf.	Average Monthly Attendance
Weekday 1st Perf.	3.38 times
Weekday 2nd "	2.56 "
Weekend 1st "	3.29 "
Weekend 2nd "	3.12 "

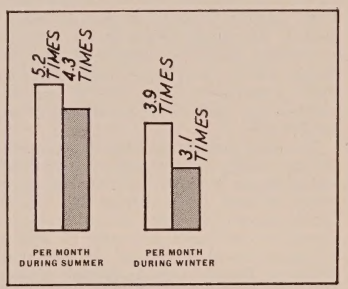
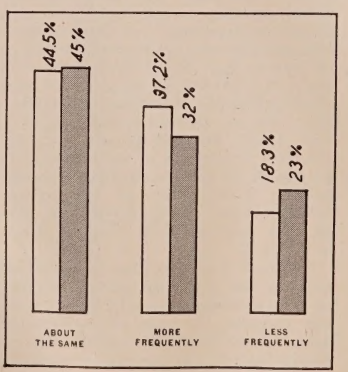


FIGURE 12. Analysis of average-attendance-per-month at motion picture theatres of all kinds by the patrons studied during 1950 (open graph) as contrasted to the preceding 1949 (shaded graph).

7. Comparing total movie attendance during 1950 with that of 1949, 37.2% (32%) of all patrons attend movies more often, 44.5% (45%) attend about as often, and 18.3% (23%) attend less often.

FIGURE 13. Analysis of total movie-going habits during 1950 (open graph) and during 1949.



8. From the standpoint of time of performance:

Time of Perf.	More Often	About Same	Less Often
Weekday 1st Perf.	39%	43.4%	17.6%
Weekday 2nd "	37.2	45.7	17.1
Weekend 1st "	33.7	47.1	19.2
Weekend 2nd "	42.6	37.6	19.8

Significance

Within the motion picture industry, the drive-in theatre long ago ceased being considered a novelty. The fact that the drive-in is no longer a novelty in the public's mind either is indicated by the revelation that only 21% (49%) of all patrons had not attended any drive-in theatre before 1950. The truth of this statement is also borne out by the increased frequency with which all classes of patrons attend drive-ins, the general average being 3.25 times a month during 1950, 2.5 during 1949, and .86 during 1948. Furthermore, all classes of patrons reported other facts which would have sounded strange indeed even two years ago: they attend drive-in theatres more frequently than they do conventional theatres, and they attend movies more frequently during the summer than they do during the winter.

Not only is total movie attendance (5.21 times per month during the summer; 3.9 times per month during the winter) on the part of the drive-in patron significantly higher than that of the typical conventional theatre patron, it appears to be still increasing. Nearly 40% of all patrons reported that they are now attending movies more frequently than they did in 1949, while less than 20% reported decreased attendance. In terms of audience reaction, the future of the drive-in theatre has never been brighter. Yet no one within the industry should neglect to appreciate the fact that at the same time drive-ins are proving themselves highly acceptable to the public, so also are they proving the entertainment value of movies and developing, or redeveloping, for many, many people the movie-going habit.

Any vehicle for accomplishing the aforementioned desirable goals should be more than welcome to the post-war motion picture industry as a whole. Nor are drive-in exhibitors and producers the only ones to share in these common benefits, for so also do conventional theatre exhibitors. Data already cited indicate that less than 30% of drive-in patrons attend drive-ins exclusively.

Likewise, time of performance data in the findings for this section indicate that, with one exception, all classes of drive-in patrons attend conventional theatres during the winter (in the absence of drive-in theatres) at a rate of over four times a month. Even during the summer, nearly 40% of the average drive-in patron's movies are seen at conventional theatres. When all of these facts are taken into consideration, together with the increased frequency of attendance which drive-ins stimulate, the true status of the drive-in theatre as a full partner in the motion picture industry is difficult to deny.

PRODUCT PREFERENCES

Findings

1. 38.3% (24%) of all patrons believe that 1950 movies, in comparison with 1949 ones, are better.
2. 51.2% (59%) believe that 1950

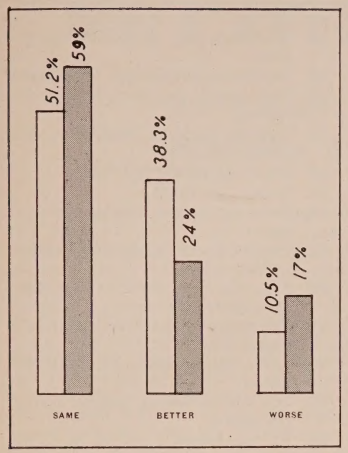


FIGURE 14. Divergence of opinion in answer to question "Are movies better than ever?" as learned from patrons during 1950 (open graph) and during the preceding 1949 (shaded graph).

movies are about as good as 1949 movies.

3. 10.5% (17%) believe that 1950 movies are not as good as 1949 movies.
4. Comparing the selection of movies available at drive-in theatres with those offered by conventional theatres:
   a. 14% (10%) **of all patrons** believe that movies at drive-ins are better.
   b. 54% (31%) believe they are about as good.
   c. 32% (59%) believe they are not as good.
5. Regarding drive-in patrons' preferences for specific types of movies:
   a. 33% (25%) **of all patrons** preferred comedies.
   b. 23% (23%) preferred dramas.
   c. 18% (21%) preferred musicals.
   d. 14% (18%) preferred Westerns.
   e. 8% (5%) preferred romances.
   f. 4% (8%) had no preferences.
6. From the standpoint of time of performance, the following rankings indicate the orders of preference of various classes of patrons:

Rank	1st Perf. Weekdays	2nd Perf. Weekdays	1st Perf. Weekends	2nd Perf. Weekends
1	Comedies	Dramas	Comedies	Comedies
2	Dramas	Comedies	Dramas	Dramas
3	Musicals	Musicals	Musicals	Westerns
4	Westerns	Romances	Westerns	Musicals
5	Romances	Westerns	Romances	Romances

Significance

All exhibitors are familiar with the slogan, "Movies Are Better Than Ever," even though some of them have privately expressed doubt on the subject. As such, it is interesting to note that 38.3% of all patrons believed that the movies they saw in 1950 were better than those they saw the year before. In 1949, only 24% of all patrons felt the same way. Again in 1950, only some 10% of all patrons believed that movies were not as good as the year before, whereas 17% felt that way in 1949.

Aside from the effectiveness of the slogan, *per se*, in creating this improvement in public opinion, it seems only fair to conclude that some real improvement in picture quality has taken place. Certainly a great deal of skill and money has been spent by producers in their attempts to raise the level of picture quality.

Considerable improvement appears to have taken place as well in the public's estimation of the quality of movies available at drive-ins, as compared with those available at conventional theatres. Only one-third of all patrons believe that the movies at drive-ins are not as desirable, whereas nearly two-thirds believed so in 1949. Accordingly, approximately 50% (30%) of all patrons believe that movies at drive-ins are about as desirable, and 14% (10%) believe that movies available at drive-ins are better than those available at conventional theatres. Nevertheless, the evidence seems clear that many drive-in exhibitors should seek, and distributors should offer, continued improvements in the availability of films for drive-in exhibition.

As for patron preferences for specific types of movies, no change over 1949 occurred in the order of importance, the most desired type being comedies, followed by dramas, musicals, Westerns, and romances. There was some shift of emphasis, however, to indicate that comedies and romances gained some strength, dramas held their own, while musicals and Westerns lost some strength. Second-performance (late evening) patrons indicated preferences somewhat different from the average, especially in the case of the weekday second-performance patrons, who differ also in terms of age and family status.

CONSUMER OPINION

Findings

In a further effort to assist drive-in exhibitors, two additional questions were asked in 1950 for the first time: (1) "What one thing do you like most about attending drive-in theatres?", and (2) "What one thing needs improvement the most?" No list of possible answers was made available from which the customer might decide, nor were any suggested answers given verbally. Although such a method produces responses which are sometimes difficult to classify, it at least introduces no bias in obtaining the responses. The results, moreover, proved very interesting.

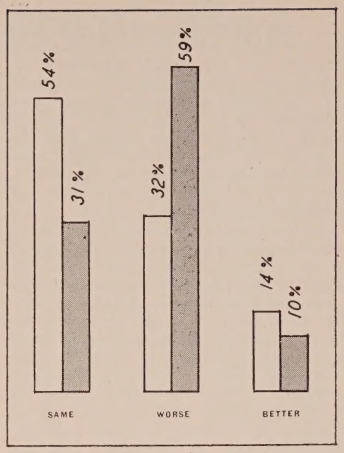
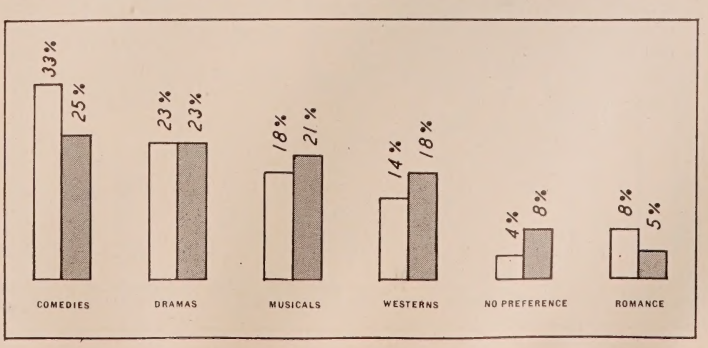


FIGURE 15. Opinions relative to the quality of motion pictures offered by drive-ins as compared to those offered in regular roofed theatres as learned from patrons during 1950 (open graph) and during the preceding 1949 (shaded graph).

Answers to the first question seemed to fall into three general classes: (1) those advantages which center around the factor of convenience, *e.g.*, not having to "dress up," not having to stand up to wait for seats, no parking problems, privacy, separate speakers, etc.; (2) those advantages which center around the task of bringing children to a movie, *e.g.*, problems of discipline, no baby sitters required, gives children more freedom of movement and expression, permits children to go or be put to sleep, keeps them "away from crowds," gives them playground facilities, etc.; and (3) those advantages which center around the factor of comfort, *e.g.*, fresh air, can relax, can talk, can smoke, can eat in car, etc. The fact that all three classes of advantages are of almost equal importance was indicated by the final tabulation, which showed that 34.5% of all patrons mentioned an advantage in the first, or "convenience" class, 28.4% in the second, or "children" class, and

FIGURE 16. Preference for types of entertainment in 1950 (open graph) and during 1949 (shaded graph).



35.1% in the third, or "comfort" class. The only significant changes from this pattern occur when second-performance patrons are considered separately, in which case less emphasis was placed on "children" advantages, and more emphasis was placed on "comfort" advantages. It goes without saying that the benefits of these various advantages should be stressed, wherever appropriate, in general or specialized advertising or promotional campaigns.

Answers to the second question, "What one thing needs improvement the most?", were not grouped into general classes so that the full range of answers could be presented to all drive-in exhibitors, many of whom have evidenced great interest in the question. It should be noted, of course, that no claim is made that the method of asking for **one** most important criticism is the best way to obtain the broadest possible base for a ranking of dislikes. For instance, if under optimum conditions and not accompanied by the many other questions in this survey, one could ask the patron to rank, in the order of importance, a number of dislikes, it would be possible to gain even more accurate data on the subject.

Nevertheless, considerable insight into the matter can be gained by a study of the responses herein presented in the order of their importance, together with the percentage of patrons mentioning each as being his or her most important "gripe."

Significance

Regardless of the fact that some of these responses are due to specific conditions confronted by patrons at the drive-in theatres where the survey was taken, the above list of "conditions needing improvement the most" provides every drive-in exhibitor with a convenient check-list of possible sources of improvement, and indicates to some extent the importance which the public places on each item. Certainly the first ten or fifteen items listed require the continued attention and interest of every conscientious exhibitor, and should be subject to further investigation in order to develop the most practical policies and techniques possible.

Complaints Mentioned by At Least 1% of All Patrons

1. 35.2%—either did not answer the question, could not think of a complaint, or responded that everything at drive-in theatres was to their satisfaction.
2. 22.8%—pictures "too old."
3. 11.4%—problems of leaving the theatre too difficult.
4. 3.2%—too many or too long intermissions.
5. 2.3%—too difficult to obtain refreshments when desired.
6. 2.2%—poor speakers.
7. 1.8%—poor grading and surfacing.
8. 1.6%—no music before shows or during intermissions.
9. 1.5%—poor screen (not enough contrast).
10. 1.3%—no windshield-wiping service.
11. 1.2%—prices of admission too high.
12. 1.1%—other cars too noisy or boisterous (reckless driving, horn-honking, spotlights, frequent entrance and exit of cars, etc.).
13. 1.1%—insects.
14. 1.0%—too many lights on during show-time.

●

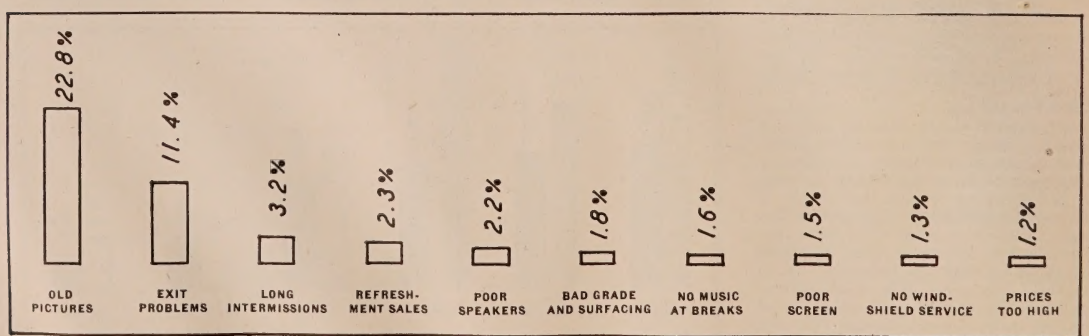
Complaints Mentioned by Less Than 1% of All Patrons

15. Pictures begin before it is dark enough to see well.
16. Patrons cannot park their cars where they like.
17. Lack of courtesy or helpfulness by car ushers.
18. Poor view of picture from rear or sides of parking area.
19. Too much time wasted at ticket booth when entering.
20. Fog or rain prevents good visibility and enjoyment.
21. Have to wait for car space on busy nights; car capacity not large enough.
22. Too much dust within the theatre area.
23. Restrooms inadequate or unkept.
24. Not enough shorts, cartoons, etc., shown.
25. Outdoor theatres located too far away from home.
26. Drive-ins should sell beer.
27. Screen too small.
28. Drive-in theatre season is too short.
29. Performances should start earlier in the evening.
30. Pictures more suitable for children should be shown.
31. Too many commercial advertisements shown.
32. There should be more midnight shows.
33. Too few or poorly located water fountains.
34. Drive-ins show too many Western pictures.
35. Hearing-aid attachments should be provided.
36. Monthly printed programs of attractions should be furnished.
37. Lights from nearby street or highway not shielded.
38. Stop showing so many previews of coming attractions.
39. Not enough drive-ins to serve the public.
40. Theatre seats should be available down front.
41. There should be more color movies.
42. Drive-ins should have gas station and tire repair services.
43. Newspaper advertisements should show when each show starts.
44. Aisle and speaker identification and layout do not permit easy location of car in the parking area.
45. Needless imperfections or marks on the face of the screen.
46. Speakers should be padded where they tend to scratch the car when hung as intended.

CONCLUSION

Drive-in theatres, as a group, are the most dynamic force in the entire motion picture industry today. Their rapid and successful development has clearly illustrated that the public is still interested in new ideas and showmanship in the presentation of motion picture entertainment.

FIGURE 17. Ten most mentioned complaints about drive-in theatre entertainment as learned from patron studies during the 1950 drive-in season.



More About Drive-In Depreciation

Government Takes First Step in Drawing Up of Fair Schedules Anxiously Awaited by Drive-In Operators

Although drive-in theatres numbered less than 100 in 1942, they have mushroomed since the end of World War II to an amazing total of over 2,200 presently in operation. While they have required sizeable initial expenditures (as much as $500,000 for a large deluxe one to a minimum of $80,000), they have been, on the whole, sound investments and have returned the initial cash outlays to the owners in reasonably short order. There was, however, a slight slacking off in receipts during the 1949-50 season that promises to bring revenue down to normal entertainment business returns, as the novelty of the outdoor theatre continues to wear off and as competition from those new structures built before the recent government ban on amusement construction makes itself felt.

Drive-In Depreciation Unique

The flourishing drive-in industry must, of course, pay taxes, but, in view of the aforementioned decline in receipts and higher operating costs, outdoor theatre operators desperately need a definite schedule of some sort which they may use to calculate depreciation of their highly expensive equipment, such as sound systems and projection machines, seasonal plumbing, underground wiring, oil surfacing, sign work, etc., none of which are actually sheltered by any building that may strictly be considered as a permanent structure.

It must be remembered that equipment which has been constructed for the clean, dry conditions of the normal roofed theatre will naturally not stand up as well when subjected to the dust, cold, sun, and all other corrosive influences of the weather in an open-air theatre. Therefore, it is not logical to assume that yardsticks used to determine depreciation periods of equipment in roofed houses can, with justice, be similarly applied in determining use life of equipment in open-air theatres.

Lack of Definite Criteria

Unfortunately, while the drive-in theatre industry has evidenced an honest desire to pay its just taxes and to amortize its equipment in sensible percentages, there have not been, up to the present time, any depreciation rates published by the Treasury Department which specifically cover drive-in theatres and their equipment. Until a taxpayer appealed the rates suggested by a local revenue agent on up to a tax court, no precedent to stand on could be established. Since the industry is still too young to have had any cases reach a tax court as yet, there has been no such precedent established in this manner. As a result, there have been no official rates which a drive-in operator could refer to in arguing his tax case, if he did not agree with those proposed by his local revenue agent. Consequently, Bureau of Internal Revenue field offices, without help or directives from Washington, have been arriving at more or less "rule of thumb" decisions that are often at great variance throughout the nation.

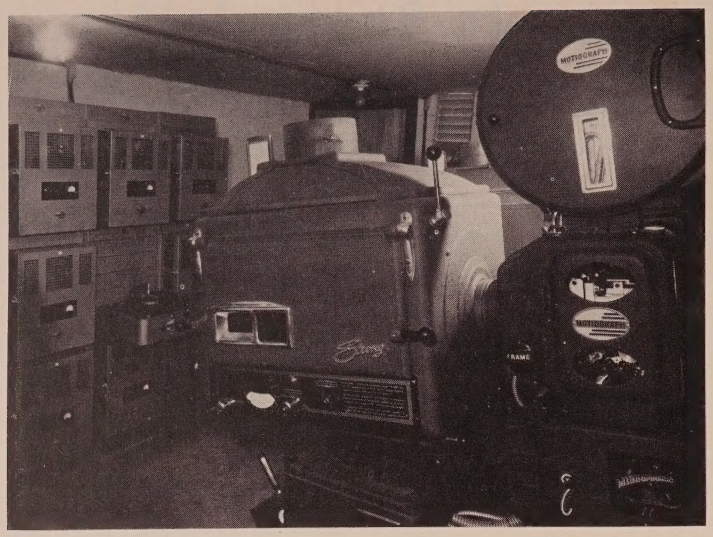
BRIEF: *While hundreds of books have been published . . . and scores of experts have set themselves up in business . . . to aid the U. S. taxpaper in figuring out what he owes Uncle Sam . . . the drive-in theatre operator has had little sure advice in filling out his return . . . particularly as far as the ticklish subject of depreciation is concerned . . . Due to the outdoor exposure of his equipment, this is an important item in any outdoor theatre.*

Lacking official rulings from Washington . . . drive-in operators have been compelled to accepted depreciation rates decided by their local revenue agents . . . oftentimes inequitable . . . In recognition of this sorry situation . . . and the need for correction . . . the Editors of THEATRE CATALOG have sought . . . and obtained . . . the first official statement from the Bureau of Internal Revenue on the subject . . . Herewith are presented the initial figures suggested by the Government itself . . . for calculating depreciation rates for drive-in equipment.

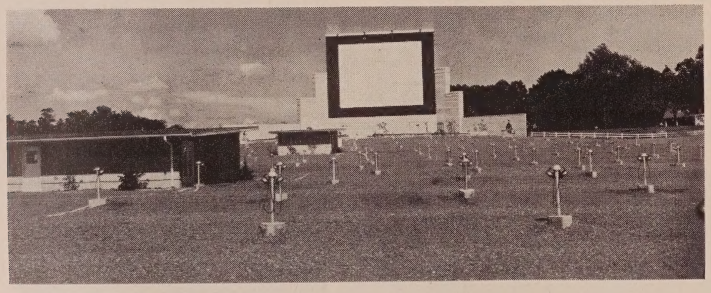
Two Temporary Expedients

In an effort to lend the drive-in operators among its readers as much of a helping hand as was possible at the time in the solution of this important tax question, the Editors of THEATRE CATALOG published in the 1949-50 Edition (pp. 288-289) two tables for calculating depreciation rates, one of which was compiled with the advice of an experienced accounting firm, and the other with the aid of a major theatre circuit operating a number of drive-ins. It was emphasized, however, that these figures were not official, had not won any particular sanction by the Treasury Department, and were to be employed only as temporary measures until such time as the Government published definite rulings in the matter.

FIVE YEARS USE LIFE is suggested by Commissioner Schoeneman of Internal Revenue for this exposed sign at the Airline, Jefferson Parish, Louisiana where Adler 17" and 10" plastic letters are used.



TEN TO FIFTEEN YEARS would apply to this Motiograph sound and projection equipment and to the Strong lamps at the Valley, Elkview, West Virginia. Individual speakers at the Paducah, Paducah, Kentucky could be charged off in three years. (Bottom) the relatively light box office buildings at the Lincoln, Philadelphia, Pennsylvania seem over assessed at 25 years due to severity of seasonal weather.



Official Word Still Sought

The publication of this information, warmly welcomed though it was by a countless number of drive-in theatre operators, gave added force to the demand for official advice from Washington on the subject. In answer to many inquiries from outdoor theatremen all over the country, the Editors of THEATRE CATALOG proceeded to write to the Honorable Francis J. Meyers, then U. S. Senator from Pennsylvania, with the request that he take the matter up with the proper authorities. Senator Meyers generously consented to discuss the question with the Treasury Department, and a reply was received shortly thereafter from George J. Schoeneman, Commissioner of Internal Revenue.

Government Takes First Stand

In his letter Mr. Schoeneman stated: ". . . Section 29.23(1)-5 of Regulations III, applicable to the Internal Revenue Code, provides in part as follows: "(. . . The reasonableness of any claim for depreciation shall be determined upon the conditions known to exist at the end of the period for which the return is made . . . The deduction for depreciation in respect of any depreciable property for any taxable year shall be limited to such ratable amount as may reasonably be considered necessary to recover during the remaining useful life of the property the unrecovered cost or other basis. The burden of proof will rest upon the taxpayer to sustain the deduction claimed . . .)

"It is not possible for the Bureau of Internal Revenue prior to the close of a taxable year and in advance of the filing and examination of the Federal income tax return of a taxpayer, to make a definite ruling with respect to the lives to be used in the determination of allowable depreciation, since this is a question of fact which must be substantiated when the internal revenue agent makes his examination.

"The industry about which you inquire is comparatively new, and as a result the Bureau has little information or experience upon which to rely for a definite conclusion as to the applicable rates pertaining to the depreciable assets. However, for your information, the following approximate lives, subject, of course, to subsequent examination and approval by the Bureau, are suggested for drive-in theatre properties, until experience furnishes more data:

Commissioner Schoeneman Suggests:

Individual loud speakers	3 yrs.
Screen	5 to 7 yrs.
Wiring	10 to 15 yrs.
Projectors and sundry equipment	10 to 15 yrs.
Office buildings, including projection room, ticket office, etc. (depending upon construction, whether of wood or brick)	25 to 50 yrs.
Oil surfacing	5 to 10 yrs.
Exposed signs	5 yrs.
Seasonal plumbing	10 yrs.

Conclusion

While the figures contained in Commissioner Schoeneman's letter by no means constitute the final and complete word on the subject of depreciation for tax purposes in drive-in theatres, they do represent the first official statement on the matter made by a responsible government spokesman. It is to be assumed, therefore, that these figures may be safely used by drive-in operators in calculating depreciation on their equipment and as an authoritative reference source in discussing tax assessments with their local revenue agent. In all probability, field representatives of the Bureau of Internal Revenue will be more than willing to be guided by these figures direct from their Washington headquarters, and thus many existing inequities and disparities in depreciation rates throughout the country may be ironed out to the satisfaction of both drive-in operators and the Treasury Department.

Drive-In Theatres of the 1951 Season

A Breakdown by Territories and States of Their Locations, Capacities, Ownerships, and Policies

BRIEF: ***Once again . . . in keeping with their continuing policy of service to the motion picture industry . . . the Editors of THEATRE CATALOG present here the findings of a national drive-in theatre survey . . . undertaken to compile a relatively accurate list of all outdoor theatres which are now operating . . . or that definitely will be operating during the 1951 season.***

The 2703 theatres listed here . . . classified both by film distribution territories and by states . . . represent an increase of 950 over last season's total of 1753!

Due to copyright prerogatives . . . and the ever-changing status of individual theatres . . . use of this service for mailing list purposes . . . without the permission of the publishers . . . is postively restricted.

Readers will recall that in the 1949-50 Edition of THEATRE CATALOG there was published what probably constituted the most comprehensive set of data on drive-ins ever to appear in print. This exhaustive listing of outdoor theatres and their locations, car capacities, ownerships, and policies was compiled, checked, and rechecked both by the home office staff of THEATRE CATALOG and the field representatives of its sister publication EXHIBITOR, the industry's fastest-growing trade paper which serves approximately 11,000 subscribers in each of the 31 distributional territories.

Since the publication of the drive-in list in the 1949-50 Edition of THEATRE CATALOG, a highly trained and competent group in the Circulation Department has zealously and meticulously kept tabs on activities in drive-in construction and operation. Files have been scrupulously maintained to record every fact available about each individual theatre with careful notations made of every change in ownership, increase or decrease in car capacity, etc.

In order to insure further the accuracy of the list, the data contained in the files were first carefully checked against the lists of several major film distributors and any discrepancies marked for further investigation. A first-class mailing was then conducted to the theatre or owner of each of the 2703 listed to verify beyond any shadow of reasonable doubt the data on hand. Any corrections were, of course, immediately noted and made accordingly. The facts and figures published herein represent, therefore, the most up-to-date information available at press time.

However, in view of the day-to-day changes in the status of drive-ins, it is not recommended that the following data be used as the basis of a mailing list. While further drive-in expansion is curtailed for the time being, due to the promulgation of NPA Order M-4 on October 16, 1950, prohibiting any type of new theatre construction, even those drive-ins presently in operation are in a constant state of flux, particularly insofar as names, ownerships, and mailing addresses are concerned. Anyone contemplating the use of the following information for such a purpose should contact the publisher, first of all for permission to do so, and, secondly, to inform himself of any changes that may have occurred since publication.

The data resulting from the endless hours expended in checking and cross-checking the files enabled the preparation of several summaries both by territories and states. They point to a current total of 2703 drive-ins, an increase of 950 since the publication of the listing in the 1949-50 Edition of THEATRE CATALOG. In all but one territory there was an increase in the number of theatres, with the greatest number of new operations (137) springing up in the Atlanta territory.

By way of further contrast with last season's findings, the 2703 drive-ins currently in operation have a total car capacity of 1,175,426, whereas the 1753 theatres operating during the 1950 season had a total car capacity of only 784,645. It should be noted, however, that

DRIVE-IN THEATRES and Their CAR CAPACITIES BY FILM DISTRIBUTION TERRITORIES

Film Distribution Territory:	*Operating—1951 Season*			*1950 Season*		
	No. of Theatres	*Total Cars*	*Ave. Cars*	*No. of Theatres*	*Ave. Cars*	*Change*
Albany, N. Y.	45*(1*)*	18,017	400	31	351	+14
Atlanta, Ga.	263*(7*)*	102,490	390	126	405	+137
Boston, Mass.	109*(6*)*	53,935	495	70	517	+39
Buffalo, N. Y.	42	24,035	572	28	570	+14
Charlotte, N. C.	289*(5*)*	73,284	254	179	233	+110
Chicago, Ill.	62*(1*)*	42,725	689	38	777	+24
Cincinnati, O.	113*(2*)*	49,923	442	99	423	+14
Cleveland, O.	88*(1*)*	36,717	417	67	388	+21
Dallas, Tex.	284*(5*)*	118,214	416	203	381	+81
Denver, Colo.	69*(5*)*	27,699	401	39	421	+30
Des Moines, Ia.	30	12,210	407	28	437	+2
Detroit, Mich.	66*(1*)*	37,139	563	42	561	+24
Indianapolis, Ind.	98*(3*)*	52,220	533	66	441	+32
Kansas City, Mo.	90	37,453	416	51	461	+39
Los Angeles, Cal.	78*(1*)*	51,090	655	58	714	+20
Memphis, Tenn.	62*(4*)*	25,112	405	35	446	+27
Milwaukee, Wis.	27*(2*)*	16,464	610	20	580	+7
Minneapolis, Minn.	46*(4*)*	20,983	456	34	436	+12
New Haven, Conn.	16	8,582	536	9	529	+7
New Orleans, La.	92*(2*)*	37,091	403	61	407	+31
New York, N. Y.	38*(1*)*	20,908	550	23	636	+15
Oklahoma City, Okla.	85*(10*)*	32,246	380	38	470	+47
Omaha, Neb.	25*(1*)*	9,832	393	19	449	+6
Philadelphia, Pa.	74*(2*)*	41,118	556	61	633	+13
Pittsburgh, Pa.	119*(3*)*	50,775	427	72	433	+47
Portland, Ore.	35*(1*)*	16,592	474	12	503	+23
St. Louis, Mo.	68*(3*)*	31,887	469	73	584	—5
Salt Lake City, Utah	74*(5*)*	28,669	388	40	411	+34
San Francisco, Cal.	94*(3*)*	50,213	534	48	574	+46
Seattle, Wash.	28	13,240	473	18	490	+10
Washington, D. C.	94*(3*)*	34,563	368	65	355	+29
Totals	2703*(82*)*	1,175,426	435	1,753	447	+950

(*) Whenever car capacities could not be ascertained, the theatres themselves were included in the totals, and the numbers unverified were signalled in the accompanying parenthesis. For each such theatre the average car capacity of the known theatres in the particular territory was then added to the gross car capacities of the territory in order to project the most probable totals. Theatres so treated represent approximately 3% of the grand total.

there has been a slight drop in the average car capacity from 447 in 1950 to 435 in 1951. Although this decrease is a relatively small one, it may well reflect the allocation of more space within theatre sites for larger playground areas, refreshment stands, projection booths, etc., with a subsequent loss in parking space.

First place in number of operating theatres goes this year to the Charlotte territory, with 289, closely trailed by last year's top-spot holder, Dallas, with 284. Even though there appear to be only 16 drive-ins operating within its boundries, New Haven still shows a sizeable increase percentage-wise over last season's 9 outdoor theatres. The sole decrease, that of 5 in the St. Louis territory, is probably due to the fact that the area passed the saturation point in the number of drive-ins which could be successfully operated there, so the less popular and poorer theatres succumbed to the inroads of fierce competition.

Turning now to distribution by states, Texas continues to lead the list with 274 drive-ins, as opposed to last season's 196, but North Carolina has jumped into second place with 193 (123 in 1950) ahead of Ohio with 158 (134 in 1950). It is interesting to note in passing that among the smaller states Nevada's 2 drive-ins of the 1950 season were increased by only one, whereas Delaware's 3 outdoor theatres increased 100% to 6.

Analysis by Film Territory

A trend toward building the most theatres in the territories possessing the greatest rural and small town population appears to continue from last season. Film distribution territories with the **largest number of drive-in theatres** are as follows: —

Territories	Theatres
1. Charlotte	289
2. Dallas	284
3. Atlanta	263
4. Pittsburgh	119
5. Cincinnati	113
6. Boston	109
7. Indianapolis	98
8. San Francisco	94
9. Washington, D. C.	94
10. New Orleans	92

It should noted, however, that the **largest total car capacities** in the 31 film distribution territories supplanted some of these leaders with the following total results: —

Territories	Cars
1. Dallas	118,214
2. Atlanta	102,490
3. Charlotte	73,284
4. Boston	53,935
5. Indianapolis	52,220
6. Los Angeles	51,090
7. Pittsburgh	50,775
8. San Francisco	50,213
9. Cincinnati	49,923
10. Chicago	42,725

A study of the **largest average car capacities** of the theatres in particular film distribution territories is likewise of interest. Here again, those territories which have the greatest concentrations of population take the lead, as may be seen below: —

Territories	Car Average
1. Chicago	689
2. Los Angeles	655
3. Milwaukee	610
4. Buffalo	572
5. Detroit	563
6. Philadelphia	556
7. New York	550
8. New Haven	536
9. San Francisco	534
10. Indianapolis	533

DRIVE-IN THEATRES AND Their CAR CAPACITIES BY STATES

NOTE: Only operating theatres, or those due to operate during the 1951 Season, are included in these totals.

States:	*No. of Theatres*	*Total Cars*
Alabama	68(2*)	25,332
Arizona	13(1*)	7,847
Arkansas	38(2*)	15,140
California	156(2*)	91,806
Colorado	32(1*)	14,757
Connecticut	16	8,582
Delaware	6(1*)	3,406
Florida	83(1*)	37,068
Georgia	86(3*)	29,716
Idaho	26(2*)	9,254
Illinois	90(1*)	54,765
Indiana	90(3*)	48,055
Iowa	38	15,291
Kansas	57	23,323
Kentucky	51	24,095
Louisiana	40(1*)	17,483
Maine	24(2*)	11,690
Maryland	14	7,194
Massachusetts	50	27,320
Michigan	68(1*)	37,939
Minnesota	28(4*)	13,413
Mississippi	36(1*)	13,762
Missouri	56(3*)	25,022
Montana	21(2*)	7,814
Nebraska	20(2*)	7,994
Nevada	3(1*)	1,350
New Hampshire	16(1*)	6,745
New Jersey	25(1*)	15,495
New Mexico	24(1*)	9,607
New York	107(1*)	52,010
North Carolina	193(3*)	48,884
North Dakota	7	3,030
Ohio	158(1*)	68,665
Oklahoma	81(10*)	30,547
Oregon	33(1*)	15,892
Pennsylvania	146(2*)	73,438
Rhode Island	4(1*)	2,595
South Carolina	96(2*)	24,400
South Dakota	12	3,943
Tennessee	61(3*)	24,347
Texas	274(5*)	114,475
Utah	28(1*)	12,416
Vermont	15(2*)	5,585
Virginia	75(3*)	26,047
Washington	27	12,975
West Virginia	62(4*)	20,871
Wisconsin	28(2*)	17,369
Wyoming	21(2*)	6,672
Total	2703(82*)	1,175,426

* *Same as in Table on P. 137*

Curiously enough, several of the territories that stand high on the list of those with the greatest number of theatres have the **smallest average car capacities,** as indicated below: —

Territories	Car Average
1. Charlotte	254
2. Washington	368
3. Oklahoma City	380
4. Salt Lake City	388
5. Atlanta	390
6. Omaha	393
7. Albany	400
8. Denver	401
9. New Orleans	403
10. Memphis	405

Analysis by State

In spite of the fact that drive-in theatres are operating in every one of the 48 states, although there are none in the District of Columbia proper, their total number in each state varies widely from a minimum of 3 in Nevada to a maximum of 274 in Texas. The following states include the **greatest number of drive-in theatres** within their boundaries:—

States	Theatres
1. Texas	274
2. North Carolina	193
3. Ohio	158
4. California	156
5. Pennsylvania	146
6. New York	107
7. South Carolina	96
8. Illinois	90
9. Indiana	90
10 Georgia	86

Attention should be called to the fact, however, that the number of theatres does not of necessity reflect the total car capacity of the particular state, so that the following contain the **largest total car capacities:** —

States	Cars
1. Texas	114,475
2. California	91,806
3. Pennsylvania	73,438
4. Ohio	68,665
5. Illinois	54,765
6. New York	52,010
7. North Carolina	48,884
8. Indiana	48,055
9. Michigan	37,939
10. Florida	37,068

Conclusion

It is obvious that the drive-in theatre has firmly entrenched itself as a strong pillar in the temple of show business. Its growth has been phenomenal and has exceeded the wildest dreams of even its most enthusiastic proponents. Furthermore, there are no indications that its saturation point throughout the United States as a whole has yet been reached, although it is true that it has probably reached the maximum number which can be supported profitably in certain areas. Of course, the aforementioned ban on amusement construction halts further drive-in construction for the time being, but there is every reason to believe that this is only temporary.

A LISTING BY DISTRIBUTION TERRITORIES

NOTE: Best available address for the theatre itself will be found immediately behind the theatre name, and lacking such address, the town itself will suffice. In many cases, there is no post office for particular towns, and accordingly, the mailing address of the executive is listed behind his name.

The various symbols used are as follows: (UNC) indicates that the particular theatre is under construction, but has not yet opened as of March 1, 1951. For all such theatres, it was attempted to verify that actual construction operations had been started, and/or that equipment had been purchased so that it could be relatively certain to open during the 1951 season. (M) indicates the length of the season in months operated by the particular theatre, i.e. (M8) meaning "8 months." (C) indicates the car capacity of the particular theatre, i.e. (C720) means the particular theatre contains "720 car parking areas" adjacent to available sound. (D) indicates the number of days per week which the particular theatre operates, i.e. (D7) means that the theatre operates "7 days each week."

Wherever any data is not yet recorded or available after continued rechecking in the field an (*) has been substituted.

Where particular theatres are operated by circuits or executives from outside of the particular town or state, some effort has been made to identify their headquarters or home address.

ALBANY TERRITORY

New York

Albany, N. Y. MENANDS DR., 55 Peyster St. Exec: Joe Miller. (M6-C475-D7)

Alexandria Bay, N. Y. THOUSAND ISLAND DR. Exec: Mrs. A. McNamara. (M6-C316-D7)

Amsterdam, N. Y. VAILS MILLS DR., Rt. 30 R.D. #4. Exec: Harry Lamont. (M6-C550-D7)

Black River, N. Y. BLACK RIVER DR. Exec: Sylvan Leff. (M7-C600-D7)

Canton, N. Y. IDEAL DR. Exec: Alex Papayanakos. (M7-C500-D7)

Canton, N. Y. SUNSET DR., Canton Road, Rt. 68. Exec: D. Gilson. (M6-C200-D7)

Colonie, N. Y. MOHAWK DR., Schenectady-Albany Rd. Exec: Fabian Th. Ct. (M6-C750-D7)

Colonie, N. Y. SARATOGA DR., Saratoga Rd. Exec: Fabian Th. Ct. (M6-C450-D7)

Crown Point, N. Y. SKYLINE DR. Exec: Arthur Landry. (M6-C300-D7)

East Greenbush, N. Y. AUTO VISION DR., Rts. 20 and 9. Exec: Neil Hellman. (M6-C400-D7)

Fonda, N. Y. FONDA DR. Exec: Francis Willette. (M6-C200-D7)

Gouverneur, N. Y. HIWAY DR. Exec: Jim Papayanakos. (M7-C350-D7)

Guilderland, N. Y. CARMAN DR. Exec: John Marotta. (M6-C400-D7)

Hudson, N. Y. SUNSET DR., Rt. 9. Exec: Frieder and Grossman. (M6-C450-D7)

Hunter, N. Y. MOUNTAIN VIEW DR. Exec: Mrs. F. Klein. (M6-C375-D7)

Lake George, N. Y. BEACH DR. Exec: E. W. Hack, 15 Fulton St., Glens Falls, N. Y. (M6-C300-D7)

Lake George, N. Y. FORT GEORGE DR., P. O. Box 244. Exec: N. S. Englanger, 39 Garrison Rd., Glens Falls, N. Y. (M6-C450-D7)

Lake George, N. Y. LAKE GEORGE DR., P. O. Rd. 1, Rt. 9. Exec: Harry Lamont. (M6-C300-D7)

Lake Placid, N. Y. SARA-PLACID DR., P.O. Box 528. Exec: Edward Hoffman. (M6-C250-D7)

Leeds, N. Y. OPEN AIR TH., Rt. 23. Exec: Harry Lamont. (M6-C200-D7)

Little Falls, N. Y. VALLEY DR. Exec: Robert Baranoff. (M6-C350-D7)

Malone, N. Y. FRANKLIN DR., 182 Elm St. Exec: W. A. Shaw. (M6-C355-D7)

Malta, N. Y. MALTA DR. Exec: Sarto J. Smaldone. (M6-C300-D7)

Massena, N. Y. SUNSET DR., Rt. 37. Exec: D. Gilson. (M6-C350-D7)

North Hoosick, N. Y. HATHAWAY DR. Exec: Sylvan Leff. (M6-C400-D7)

Ogdensburg, N. Y. RIVERSIDE DR., Rt. 7. Exec: J. F. Free, Turnbull and Morley. (M6-C250-D7)

Oneonta, N. Y. DEL SEGO DR. Exec: Bert D. Mitchell and William Warnken, Sr. (M6-C300-D7)

Oneonta, N. Y. NORWICH DR. Exec: Jack Root. (M6-C500-D7)

Oswego, N. Y. MIDWAY DR., W. River Rd. Exec:* (M* -C* -D*)

Plattsburg, N. Y. PLATTSBURG DR., P.O. Box 203. Exec: R. R. Berry. (M5-C400-D7)

Plattsburg, N. Y. STAR DUST DR., 291 Margaret St. Exec: Ira Henry. (M6-C365-D7)

Potsdam, N. Y. MOONLITE DR., Norwood Road, Rt. 56. Exec: A. Papayanakos. (M6-C480-D7)

Pottersville, N. Y. STARLITE DR. Exec: Whitman & Downey. (M6-C450-D7)

Richmondville, N. Y. COBLESKILL DR. Exec: Cy Hotaling and Edin Wohr. (M6-C300-D7)

Rotterdam Junction, N. Y. RIVERVIEW DR. Exec: Rotterdam Drive-in Theatres, Inc. (M6-C550-D7)

South Glens Falls, N. Y. AUST'S DR., Rt. 9. Exec: William H. Aust. (M6-C312-D7)

Stillwater, N. Y. HUDSON RIVER DR. Exec: Joe Miller. (M6-C400-D7)

Tupper Lake, N. Y. TUPPER'S DR. Exec: Leon Dechene, P. O. Box 57. (M6-C350-D7)

Utica, N. Y. KALLET DR., Utica-Rome Road. Exec: M. Kallet. (M6-C780-D7)

Utica, N. Y. WGAT DR., Kempf Blvd. Exec: J. Eric Williams. (M6-C800-D7)

Voorheesville, N. Y. INDIAN LADDER DR. Exec: Hallenbeck and Riley. (M6-C360-D7)

Watertown, N. Y. NORTHSIDE DR. Exec: Dr. Phillip Liebig. (M6-C450-D7)

Watertown, N. Y. STARLITE DR., Adams-Watertown Road, Rt. 11. Exec: Fred Kleemler. (M6-C400-D7)

West Sand Lake, N. Y. RUSTIC DR. Exec: Rustic Drive-in Th. Corp. (M7-C300-D7)

Whitehall, N. Y. WHITEHALL DR., 66 Saunders St. Exec: John DiResta. (M6-C299-D7)

ATLANTA TERRITORY

Alabama

Alabama City, Ala. GROVE DR. Exec: B. W. Wright. (M12-C350-D7)

Albertville, Ala. MARSHALL DR., Box 223. Exec: W. W. Hammonds, Jr., A. W. Hammond and Cullen B. Goss. (M12-C500-D7)

Anniston, Ala. BAMA DR. Exec: J. E. Aaron. (M12-C500-D7)

Anniston, Ala. MIDWAY DR. Exec: A.B.C. Theatre Enterprises. (M12-C350-D7)

Athens, Ala. ATHENS DR. Exec: Publix Theatres Ct. (M12-C600-D7)

Athens, Ala. HATFIELD DR. Exec: A.B.C. Theatre Ent. (M12-C225-D7)

Auburn, Ala. AUBURN OPELIKA DR., Hwy. 19. Exec: Martin Theatres. (M12-C430-D7)

Bessemer, Ala. AUTO MOVIES No. 1, P.O. Box 415. Exec: J. C. Worthington. (M12-C275-D7)

Bessemer, Ala. BESSEMER DR., Rt. 8. Exec: C. E. Ambrose. (M12-C200-D7)

Birmingham, Ala. FAIR PARK DR., Hwy. 31. Exec: N. H. Waters, Waters Theatre Co. (M8-C650-D6)

Birmingham, Ala. ROEBUCK DR., Hwy. 11. Exec: N. H. Waters, Waters Theatre Co. (M12-C500-D7)

Birmingham, Ala. SHADES MT. DR., Hwy. 31. Exec: N. H. Waters, Waters Theatre Co. (M12-C500-D7)

Bridgeport, Ala. SOUTHPORT DR. Exec: Ben R. Nation. (M12-C250-C7)

Clanton, Ala. CLANTON DR., P.O. Box 222. Exec: J. A. Jackson. (M8-C416-D6)

Cullman, Ala. 31 DR., P. O. Box 15. Exec: A.B.C. Theatre Ent. (M12-C290-D6)

Decatur, Ala. SUNSET DR., P.O. Box 1157. Exec: Crescent Amusement Co. (M12-C400-D6)

Demopolis, Ala. GROVE DR. Exec: H. W. Webb. (M12-C250-D7)

Dothan, Ala. SKI-VUE DR. Exec: Martin Davis Theatres Ct. (M9-C400-D7)

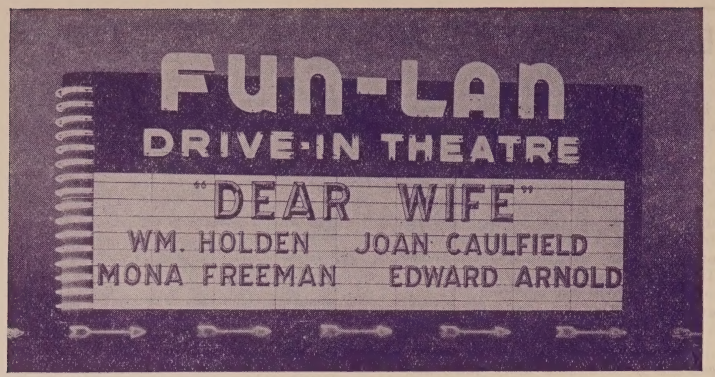
East Brewton, Ala. EAGLE DR. Exec: Martin Ths. (M12-C315-D7)

East Tallassee, Ala. TALA-C DR. Exec: McLendon Theatres Ct., Union Springs. (M12-C400-D7)

Enterprise, Ala. M. O. DR. Exec: Murphy and Oliver. (M12-C200-D7)

Enterprise, Ala. CECIL DR. Exec: Fred McLendon. (M12-C350-D7)

THE ENTRANCE SIGN ABOVE THE BOXOFFICE welcomes patrons to the Arnold Drive-In, near Tullahoma, Tenn. Situated on a main highway, the 500-car theatre has a new all-steel screen tower.



ATTRACTING READY ATTENTION TO THE FRONT of the Fun-Lan Drive-In, Tampa, Fla., is an effective approach board with Adler 17" and 10" Plastic Letters cleverly used interchangeably on Adler Frames.

Eufaula, Ala. BAMA DR. Exec: Martin Ths. (M12-C322-D7)

Fayette, Ala. DIXIELAND DR. Exec: R. C. Cobb. (M12-C* -D7)

Florence, Ala. JOY-LAN DR., 1130 N. Wood St. Exec: Dan W. Davis. (M12-C700-D7)

Florence, Ala. PARK-VUE DR. Exec: T. T. Miller. (M12-C* -D7)

Florence, Ala. WILSON DR., P. O. Box 642. Exec: Cullen B. Goss, E. W. Wells and A. W. and W. W. Hammonds. (M* -C536-D*)

Fort Payne, Ala. HAMILTON DR. Exec: Dave and Malk. (M12-C350-D7)

Gadsden, Ala. DRIVE IN, Anniston Hwy. Exec: B. W. Wright. (M12-C422-C7)

Geneva, Ala. DRIVE-IN TH. Exec: J. Howell and Odice Robbins. (M12-C150-D7)

Huntsville, Ala. WHITESBURG DR., P. O. Box 558. Exec: F. H. Thomas. (M9-C450-D6)

Jasper, Ala. 78 DR. Exec: J. M. Miller. (M12-C325-D6)

Langdale, Ala. JOY DR. Exec: Fred T. McLendon Ct. (M12-C400-D7)

Manchester, Ala. MANCHESTER DR., Hwy. 5. Exec: C. E. Crouch, 1009 Highland Ave., N., Jasper, Ala. (M12-C200-D6)

Montgomery, Ala. DRIVE IN, Hwy. 31. Exec: R. J. Barnes. (M12-C350-D7)

Montgomery, Ala. FAIRVIEW DR. Exec: Wilby-Kincey Theatres Ct. (M12-C550-D7)

Muscle Shoals, Ala. PARK-VUE DR. Exec: T. T. Miller and J. E. Hobb. (M12-C400-D7)

Muscle Shoals, Ala. TRI-CITIES DR., 2nd and Baker Hwy. Exec: A. D. Thompson and J. C. Hannah. (M12-C250-D7)

Opelika, Ala. DRIVE IN, Rt. 3. Exec: R. V. Crumpton. (M9-C250-D6)

Opp, Ala. MIDWAY DR. Exec: H. Barnes and J. E. Dee. (M12-C300-D7)

Oxford, Ala. SKYWAY DR. Exec: J. E. Aaron. (M9-C425-D6)

Phenix City, Ala. PHENIX DR. Exec: Martin Ths. Ct. (M12-C400-D7)

Prattville, Ala. PRATT-MONT DR. Exec: G. C. Coburn & Sons. (M9-C400-D7)

Roanoke, Ala. TWILITE DR. Exec: Martin Ths. Ct. (M12-C300-D7)

Russellville, Ala. KING DR. Exec: Lee King. (M9-C250-D7)

Samson, Ala. TOP DR. Exec: J. C. Powell. (M12-C180-D7)

Scottsboro, Ala. TAWSENTHA DR. Exec: Robert D. Word. (M12-C500-D7)

Selma, Ala. SEL-MONT DR., Montgomery Hwy. Exec: Wilby-Kincey Theatres Ct. (M12-C500-D7)

Shawmut, Ala. HI-WAY DR. Exec: Al-Dun Amusement Co. (M12-C410-D7)

Sylacauga, Ala. COMET DR. Exec: Martin Theatres Ct. (M10-C350-D7)

Sylacauga, Ala. SKYVIEW DR. Exec: O. L. Redfern. (M12-C300-D7)

Talladega, Ala. TALLADEGA DR. Exec: Martin Theatres Ct. (M10-C435-D7)

Troy, Ala. STARLITE DR. Exec: Troy Drive-In Theatres, Inc. (M12-C300-D6)

Tuscaloosa, Ala. SKYWAY DR. Exec: H. G. Cleveland. (M12-C300-D7)

Tuscaloosa, Ala. VARSITY DR. Exec: Best Drive-In Th., Inc. (M12-C400-D7)

Tuskegee, Ala. LINCOLN DR. Exec: A.B.C. Theatre Ent. (M12-C250-D7)

Florida

Altamonte Springs, Fla. PRAIRIE LAKE DR. Exec: L. H. Andrews. (M12-C685-D7)

Arcadia, Fla. DESOTO DR. Exec: C. C. Sutton. (M12-C* -D7)

Bartow, Fla. OUTDOOR DR. Exec: Mrs. J. E. Raulerson. (M12-C275-D7)

Blountstown, Fla. DRIVE-IN TH. Exec: W. H. Graham. (M12-C200-D7)

Bradenton, Fla. BRADENTON DR., 2305 Ninth St. W. Exec: R. A. Combs. (M12-C219-D7)

Bradenton, Fla. SUBURBAN DR. Exec: Carl Chalman. (M12-C650-D7)

Brooksville, Fla. 41 DR. Exec: A.B.C. Theatre Ent. (M12-C800-D7)

Chattachoochee, Fla. DRIVE-IN TH. Exec: Shellgrove. (M12-C180-D7)

Chipley, Fla. STARLITE DR. Exec: R. Rogers. (M12-C100-D7)

Clearwater, Fla. GULF-TO-BAY DR. Exec: Ames, Shingler and Partlow. (M12-C660-D7)

Clearwater, Fla. OUTDOOR DR., Hwy. 19. Exec: Owen W. Philpott. (M12-C250-D7)

Coral Gables, Fla. CORAL WAY AUTO TH., 7080 Coral Way (SW 24th St.). Exec: Edw. Melniker. (M12C550-D7)

Dade City, Fla. JOY-LAN DR. Exec: Carl Floyd. (M12-C250-D7)

Dania, Fla. DANIA DR., Dania Beach Rd., P.O. Box 478. Exec: Edward McCloskey. (M12-C500-D7)

Daytona Beach, Fla. DRIVE IN, Deland Road. Exec: R. E. Beck. (M12-C375-D7)

Daytona Beach, Fla. NEPTUNE DR. Exec: W. D. Huttig. (M12-C504-D7)

De Funiak Springs, Fla. HI-WAY 90 DR. Exec: E. C. Goodwin. (M12-C110-D7)

De Land, Fla. DE LAND OUTDOOR TH. Exec: R. E. Hawker and H. W. Alexander. (M12-C300-D7)

Dover, Fla. PLANT CITY DR. Exec: Carl T. McKnight, C. C. Blake. (M12-C500-D7)

Eustis, Fla. MOVIE GARDEN DR. Exec: Stanley Tyre and Harlan Dye. (M12-C400-D7)

Ft. Lauderdale, Fla. DRIVE IN, W. Broward Blvd. at Wingate Rd. Exec: Al Rook. (M12-C500-D7)

Ft. Lauderdale, Fla. HI-WAY DR. Exec. A. C. Cowles. (M12-C700-D7)

Ft. Myers, Fla. DRIVE-IN TH. Exec: E. J. Freger. (M12-C430-D7)

Ft. Pierce, Fla. FT. PIERCE DR., P. O. Box 350. Exec: Sam D. Bennett. (M12-C500-D7)

Gainesville, Fla. SKYVIEW DR., 3000 Hawthorne Road, P. O. Box 286. Exec: K. T. Barfield. (M12-C300-D7)

Hallandale, Fla. HALLANDALE DR., Hwy. 1, P. O. Box 916. Exec: S. Arthur Ashworth, 335 New York St., Hollywood. (M12-C500-D7)

Homestead, Fla. BREEZEWAY DR., P. O. Box 755. Exec: C. B. Chambers. (M12-C350-D7)

Jacksonville, Fla. AIR BASE DR., Box 395, Rt. 4. Exec: Lahoca Theatres. (M12-C425-D7)

Jacksonville, Fla. ATLANTIC DR., Beach Road. Exec: Harris Robinson, Dixie Drive-In Theatres Ct. (M12-C361-D7)

Jacksonville, Fla. MAIN STREET DR. Exec: Talgar Theatres. (M12-C700-D7)

Jacksonville, Fla. NORMANDY DR., 5003 Normandy Blvd., P. O. Box 6823. Exec: R. E. Beck. (M12-C1000-D7)

Jacksonville, Fla. SKYWAY DR., 1887 Kings Road. Exec: Roy Benjamin. (M12-C375-D7)

Jacksonville Beach, Fla. BEACH DR. Exec: Talgar Theatres. (M12-C450-D7)

Lake City, Fla. LUNAR OUTDOOR TH. Exec: Cannon Ths. (M12-C300-D7)

Lakeland, Fla. LAKELAND DR. Exec: C. W. Murrell. (M12-C456-D7)

Lakeland, Fla. SILVERMOON DR., Hwy. 92. Exec: I. C. Mize. (M12-C400-D7)

Lake Worth, Fla. DIXIE SKYDROME DR., 2515 N. Dixie Hwy. Exec: James E. Frew. (M12-C600-D7)

Leesburg, Fla. CREST DR. Exec: M and M Theatres. (M12-C314-D7)

Live Oak Fla. NOVA DR. Exec: Cannon Theatres. (M12-C200-D7)

Lockhart, Fla. RI-MAR DR., P.O. Box 258. Exec: Ben Rivers, Jack Martin, Sam Manning. (M12-C400-D7)

Miami, Fla. DIXIE DR. Rt. 2, P.O. Box 675. Exec: Martin Wucher (M12-C450-D7)

Miami, Fla. LE-JEUNE AUTO PARK. Exec: N. H. Bernstein. (M12-C800-D7)

Miami, Fla. MIAMI DR., 705 N.W. 81st. Exec: E. M. Loew Ct. (M12-C1000-D7)

Miami, Fla. 27TH AVENUE DR., 2780 N.W. 87th St. Exec: Wilden Corp. (M12-C650-D7)

Miami Beach, Fla. TROPICAIRE DR., 7751 Bird Rd. Exec: W. L. McComas. (M12-C700-D7)

Monticello, Fla. KOZY DR. Exec: Sam Stratos. (M12-C250-D7)

North Miami, Fla. BOULEVARD DR., 14311-143rd St. Exec: Wometco Ct. (M12-C1000-D7)

Ocala, Fla. DRIVE IN, Rt. 441. Exec: Carl C. Howell. (M12-C550-D7)

Okeechobee, Fla. OKEECHOBEE DR. Exec: Exhibitors Service. (M12-C102-D7)

Orlando, Fla. KUHL AVE. DR., 2400 Kuhl Ave. Exec: Jim Partlow. (M12-C400-D7)

Orlando, Fla. ORLANDO DR., P.O. Box 1214, Orange Blossom Trail. Exec: Harris Robinson, Dixie Drive-In Theatres Ct. (M12-C298-D7)

Palatka, Fla. LINDA DR. Exec: Donald B. Gawthrop. (M12-C400-D7)

Perry, Fla. PERRY DR. Exec:A.B.C. Theatre Ent. (M12-C300-D7)

Riviera Beach, Fla. RIVIERA DR. Exec: Roy Lewis. (M12-C400-D7)

St. Augustine, Fla. BEACH DR. Exec: Ray S. Ettel and Edw. Douglass. (M12-C550-D7)

St. Cloud, Fla. DRIVE IN. Exec: C. Paulley and E. F. Heinz. (M12-C395-D7)

St. Petersburg, Fla. DRIVE IN, 4th St. and 72nd Ave. Exec: Florida State Theatres Ct. (M12-C400-D7)

St. Petersburg, Fla. GULF WIND DR., 6688 Gulf Blvd. Exec. O. W. Philpott. (M12-C700-D7)

St. Petersburg, Fla. SKYVUE DR. Exec: C. C. Sutton. (M12-C426-D7)

St. Petersburg, Fla. 28th ST. DR. Exec: P. J. Sones and Carl Floyd. (M12-C780-D7)

Sanford, Fla. MOVIELAND RIDE IN, P. O. Box 70. Exec: Sanford Auto Theatres, Inc. (M12-C440-D7)

Sarasota, Fla. SARA DR. Exec: Waller & Thomas Amusements. (M12-C400-D7)

Sarasota, Fla. TRAIL DR., Tamiami Trail. Exec: Hugh Thomas. (M12-C445-D7)

Tallahassee, Fla. CAPITOL DR., Apalachicola Hwy. Exec: Talgar Theatres. (M12-C348-D7)

Tampa, Fla. AUTO PARK, 3600 - 22nd St. and Causeway Blvd. Exec: S. E. Britton. (M12-C500-D7)

Tampa, Fla. DALE MABRY DR., Dale Mabry Hwy. and Gandy Blvd. Exec: Sam Wilson. (M12-C700-D7)

Tampa, Fla. DRIVE IN, W. Hillsboro Ave. and Lincoln Rd. Exec: Florida State Theatres. (M12-C400-D7)

Tampa, Fla. FUN-LAN DR., 22nd St. and E. Hillsboro. Exec: P. J. Sones and S. T. Wilson. (M11-C650-D7)

Tampa, Fla. SKY WAY DR., 11805 N. Florida Ave. Exec: Troy Martin. (M12-C250-D7)

Tarpon Springs, Fla. PLEASANT VALLEY DR., Rt. 19. Exec: James F. Hall. (M12-C275-D7)

Vero Beach, Fla. VERO BEACH DR. Exec: Talgar Theatres. (M12-C500-D7)

W. Palm Beach, Fla. BLVD. DR., S. Blvd. and Haverhill Rd. Exec: C. N. Hall. (M12-C500-D7)

Winter Garden, Fla. STARLITE DR. Exec: C. M. Biggers. (M12-C250-D7)

Winter Haven, Fla. OUTDOOR DR., Hwy. 17. Exec: Talgar Theatres. (M12-C300-D7)

Winter Park, Fla. WINTER PARK DR. Exec: Harris Robinson, Dixie Drive-In Theatres Ct. (M12-C700-D7)

Georgia

Adel, Ga. ADEL AUTO TH. Exec: J. G. Snellgrove. (M12-C100-D7)

Albany, Ga. CAPITOL DR. Exec: A.B.C. Theatre Ent. (M12-C250-D7)

Albany, Ga. GEORGIA DR. Exec: Adolph Gortatowski. (M12-C425-D7)

Albany, Ga. SLAPPEY DR. Exec: L. T. Sheffield. (M12-C350-D7)

Americus, Ga. SUNSET DR. Exec: Martin Theatres Ct. (M12-C300-D7)

Arco (Brunswick), Ga. SUNSET DR., Jacksonville Hwy., P.O. Box 7. Exec: J. Mann. (M9-C400-D7)

Ashburn, Ga. JOY AUTO DR. Exec: Jack J. Parrish. (M12-C140-D7)

Athens, Ga. DRIVE IN, Atlanta Hwy. Exec: Fred Raney and T. C. Hatchett. (M9-C300-D6)

Atlanta, Ga. BANKHEAD DR., Bankhead Hwy. Exec: West End Theatre Ent. (M12-650-D7)

Atlanta, Ga. PIEDMONT DR., 2426 Piedmont Rd., N.E. Exec: Harris Robinson, Dixie Drive-In Theatres Ct. (M12-C650-D7)

Atlanta, Ga. STARLIGHT DR., 2000 Moreland Ave. Exec: Fred Coleman, Eastpoint Amusement Ct. (M12-C900-D7)

Atlanta, Ga. STEWART DR., 2685 Stewart Ave. S.W. Exec: Harris Robinson, Dixie Drive-In Theatres Ct. (M12-C650-D7)

Augusta, Ga. AUGUSTA DR., Sandbar Ferry Rd., P.O. Box 56. Exec: Harris Robinson, Dixie Drive-In Theatres Ct. (M12-C315-D7)

Augusta, Ga. SKYVIEW DR., Olive Rd. Exec: D. D. Boardman. (M10-C650-D7) (plus 1,000 seats)

Bainbridge, Ga. AZALEA DR. Exec: Martin Theatres Ct. (M12-C300-D7)

Blakely, Ga. PETERS DR. Exec: C. S. Dunn. (M12-C300-D6)

Brunswick, Ga. STARLIGHT DR., Glynn Ave., P. O. Box 521. Exec: Norris L. Stevens. (M12-C325-D6)

Cairo, Ga. CAIRO DRIVE IN. Exec: Dunn Bros. (M12-C360-D7)

Calhoun, Ga. BEL-AIR DR. Exec: Martin Theatres Ct. (M12-C300-D7)

Camilla, Ga. DRIVE IN. Exec: Dunn Brothers. (M12-C300-D7)

Canton, Ga. HOWELL'S DR. Exec: L. L. Howell. (M12-C300-D7)

Canton, Ga. DRIVE IN. Exec: Martin & Thompson Theatres. (M12-C350-D7)

Carrollton, Ga. DRIVE-IN TH. Exec: J. E. Duncan. (M12-C300-D7)

Cartersville, Ga. SKYWAY DR. Exec: Jimmy Harris. (M12-C400-D7)

Cartersville, Ga. STARLITE DR. (CLO.) Exec: Martin Ths. Ct. (M12-C305-D7)

Chamblee, Ga. PEACHTREE DR. Exec: Community Theatres. (M12-C525-D7)

Chatsworth, Ga. COHUTTA DR. Exec: W. W. Fincher. (M7-C200-D6)

Claxton, Ga. DRIVE-IN TH. Exec: Tos, Inc. (M12-C175-D7)

College Park, Ga. ROOSEVELT DR., RFD No. 3, P. O. Box 298. Exec: East Point Amuse. Co. (M12-C500-D7)

Columbus, Ga. DRIVE IN, 1004 Benning Road. Exec: F. S. Shingler. (M12-C300-D7)

Columbus, Ga. COLUMBUS DR., 1112 - 45th. Exec: William K. Jenkins, Ga. Th. Co. (M12-C450-D7)

Cordele, Ga. DRIVE-IN TH. Exec: R. T. Moody. (M12-C150-D7)

Covington, Ga. HUB DR., Mansfield Hwy. Exec: Hub Drive-In Company. (M7-C325-D7)

Dalton, Ga. CALHOUN DR. Exec: W. E. Fischer. (M12-C300-D6)

Dalton, Ga. CHEROKEE DR. Exec: Martin Theatres Ct. (M12-C440-D7)

Douglas, Ga. SKYVIEW DR. Exec: J. B. Brown. (M-12-C150-D7)

Dublin, Ga. DRIVE IN. Exec: Martin Theatres Ct. (M12-C400-D6)

Eastman, Ga. EASTMAN DR. Exec: Martin Theatres Ct. (M12-C250-D7)

Elberton, Ga. ELBERTON DR. Exec: Publix-Lucas Corp. (M12-C500-D7)

Fitzgerald, Ga. DRIVE IN. Exec: R. T. Moody. (M12-C150-D7)

Forsyth, Ga. MIDWAY DR. Exec: Midway Theatres. (M12-C200-D7)

Fort Valley, Ga. No. 7 DR. Exec: Jones and Harris. (M12-C200-D7)

Gainesville, Ga. SKYVIEW DR., Hwy. 19, P. O. Box 142. Exec: John Thompson. (M12-C406-D7)

Greensboro, Ga. GREENPOINT DR. Exec: Boswell and Reynolds. (M12-C400-D7)

Griffin, Ga. SPALDING DR., North Hill St. Ext. Exec: R. W. Getzen. (M12-C425-D6)

Griffin, Ga. IRISH DR. Exec:* (M12-C* -D7)

Hapeville, Ga. SKYWAY DR. Exec: E. W. Pitman, College Park, Ga. (M12-C* -D7)

Hawkinsville, Ga. HAWKINSVILLE DR. Exec: Martin-Thompson Th. Ct. (M12-C280-D7)

Jesup, Ga. FAMILY DR. Exec: W. P. Reggins. (M12-C300-D7)

La Grange, Ga. LA GRANGE DR., Hwy. 29. Exec: O. C. Lam, Lam Amusement Ct. (M12-C500-D6)

Macon, Ga. DIXIE DR., Old Jeffersonville Rd., P.O. Box 397. Exec: Harris Robinson, Dixie Drive-In Theatres Ct. (M12-C327-D7)

Macon, Ga. 41 H-WAY DR. Exec: Outdoor Theatres. (M12-C700-D7)

Macon, Ga. STARLITE DR., Old Columbus Rd. Exec: J. L. Hartman. (M12-C300-D7)

Manchester, Ga. CIRCLE DR. Exec: H. R. Richards. (M12-C250-D6)

McCaysville, Ga. TWIN CITY DR. Exec: W. H. Fincker. (M12-C350-D7)

McRae, Ga. M & T DR. Exec: Martin-Thompson Ct. (M12-C300-D7)

McRae, Ga. WILLIAMS DR. Exec: C. A. Williams. (M12-C650-D7)

Marietta, Ga. DRIVE-IN TH. Exec: Martin Theatres Ct. (M12-C425-D7)

Marietta, Ga. FIVE OAKS DR. (CLO.) Exec: Martin Theatres Ct. (M12-C425-D7)

Montezuma, Ga. JEM DR. Exec: J. E. Martin. (M12-C309-D7)

Moultrie, Ga. DRIVE IN, Quitman Road. Exec: R. T. Moody. (M12-C200-D7)

Nashville, Ga. SUNSET DR. Exec: W. H. Tygart. (M12-C100-D7)

Putney, Ga. SOWEGA AUTO, Camilla Hwy. Exec: M. C. Dunford, Albany, Ga. (M12-C350-D7)

Quitman, Ga. QUITMAN DR. Exec: H. P. Juhan, Jr. and G. R. Gardner. (M12-C150-D7)

Rome, Ga. CEDAR VALLEY, Hwy. 27 and Cave Spring Rd. Exec: O. C. Lam, Lam Amuse. Ct. (M12-C700-D6)

Rossville, Ga. STARLITE DR. Exec: Mrs. Bedford. (M12-C300-D7)

Savannah, Ga. CIRCLE DR. Exec: A. T. Livingston. (M12-C250-D7)

Savannah, Ga. VICTORY DR., Victory Drive. Exec: Harris Robinson, Dixie Drive-In Theatres Ct. (M12-C234-D7)

Savannah, Ga. HIGHWAY 80 DR., P.O. Box 1455. Exec: Harris Robinson, Dixie Drive-In Theatres Ct. (M12-C700-D7)

Savannah, Ga. MONTGOMERY DR. Exec: Mel Brown. (M12-C500-D7)

Statesboro, Ga. FAMILY AUTO DR. Exec: Hal Macon. (M12-C200-D7)

Swainsboro, Ga. DIXIE DR. Exec: Dixie Amusement. (M12-C200-D7)

Sylvania, Ga. SKYVIEW DR., Hwy. 301. Exec: Mrs. Jos. Lariscy. (M12-C190-D7)

Sylvester, Ga. SYLVESTER DR. Exec: J. G. Snellgrove. (M12-C200-D7)

Thomasville, Ga. HI-WAY DR., Thomasville-Tallahassee Hwy. Exec: N. W. Williams, Interstate Enterprises Ct. (M12-C324-D6)

Thomson, Ga. MELODY DR. Exec: Martin Theatres. Ct. (M12-C366-D7)

Tifton, Ga. PINES DR. Exec: Martin Theatres Ct. (M12-C300-D7)

Trion, Ga. MOONLITE DR. Exec: A. L. Harris. (M12-C150-D7)

Valdosta, Ga. FORREST DR., P. O. Box 674. Exec: Martin Theatres Ct. (M12-C300-D6)

Vidalia, Ga. PETE'S DR., Lyon Rd., P. O. Box 462. Exec: Pal Amusement Ct. (M12-C350-D7)

Warner-Robins, Ga. M & T DR. Exec: Martin-Thompson Ct. (M12-C300-D7)

Waycross, Ga. SKYLINE DR., Hwy. 1. Exec: William K. Jenkins, Georgia Theatre Co. (M12-C500-D7)

Waycross, Ga. WAYCROSS DR., P. O. Box 907. Exec: L. H. Holloway. (M12-C300-D7)

Waynesboro, Ga. DRIVE-IN TH. Exec: L. Bailey. (M12-C100-D7)

West Point, Ga. VALLEY DR., Rt. 5. Exec: T. W. Petery. (M12-C* -D7)

Woodbury, Ga. WOODBURY DR. Exec: J. McLendon. (M12-C100-D7)

Tennessee

Alcoa, Tenn. LAKEMONT DR., Hwy. 129. Exec: Faree, Pemberton, Milligan. (M12-C250-D7)

Athens, Tenn. STARLITE DR., P.O. Box 297. Exec: J. H. Owens. (M9-C200-D7)

Bluff City, Tenn. TWIN CITY DR. Exec: Mrs. Harvey H. Diggs. (M12-C300-D7)

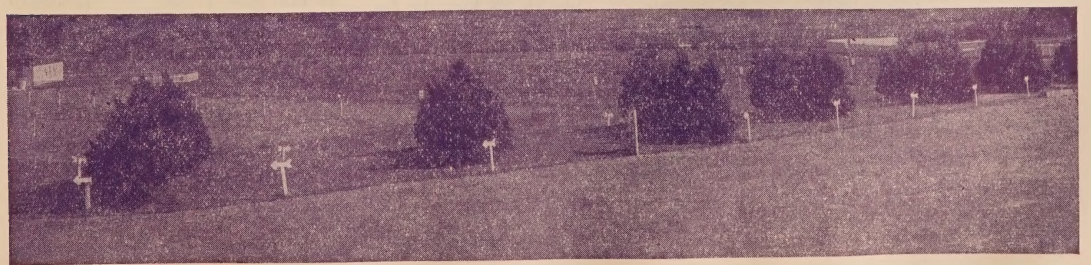
Chattanooga, Tenn. 41 DR. Exec: W. H. Flincker. (M12-C400-D7)

Chattanooga, Tenn. RED BANK DR. Exec: Independent Ths. Ct. (M9-C500-D7)

Chattanooga, Tenn. SKYWAY DR., 5500 Brainerd Rd. Exec: Don Shaw. (M12-C400-D7)

Clarksville, Tenn. MOONLITE DR. Exec: Lawrence McKinney. (M12-C500-D7)

EVERGREENS and other types of ornamental planting are used in many drive-ins to outline driveways and to beautify their appearances.



Cleveland, Tenn. CHEROKEE DR. Exec: Bruce Cox. (M12-C280-D7)

Cleveland, Tenn. CLEVELAND DR., Harrison Rd. Exec: G. B. Oldum, Walter L. Morris. (M10-C400-D6)

Columbia, Tenn. DAN-DEE DR. Exec: A.B.C. Theatre Ent. (M12-C450-D7)

Columbia, Tenn. SUNDOWN DR. Exec: S. S. Fleming. (M12-C550-D7)

Crossville, Tenn. STARLITE DR. Exec: Clarence Webb. (M12-C250-D7)

Dayton, Tenn. RHEA DR., Rt. 2. Exec: Condon Graham. (M9-C300-D6)

Elizabethton, Tenn. STATELINE DR. Exec: R. D. Dunn. (M12-C250-D7)

Fayetteville, Tenn. HIGHWAY 64 DR. Exec: Couch & Richardson. (M12-C* -D7)

Fountain City, Tenn. SKYWAY DR., 6222 Broadway. Exec: G. D. Baker. (M12-C450-D6)

Greeneville, Tenn. NITE AUTO MOVIE. Exec: Ernest Knight. (M8-C250-D6)

Harriman, Tenn. ROANE DR. Exec: G. D. Baker. (M12-C300-D7)

Johnson City, Tenn. TRI-CITIES DR., Johnson City-Bristol Hwy. Exec. Bernie Wylie. (M12-C300-D7)

Kingsport, Tenn. BAYS MOUNTAIN DR. Exec: J. R. Pierce, Jr. (M12-C200-D7)

Knoxville, Tenn. FAMILY DR., 3546 Kingston Pike. Exec: R. J. Barnes. (M12-C511-D7)

Knoxville, Tenn. SUNSET DR. Exec: L. W. Howard and G. L. Howard. (M12-C1400-D7)

Knoxville, Tenn. SKYWAY DR. Exec: J. R. Barnes. (M12-C510-D7)

Knoxville, Tenn. STARLITE DR. Exec: Tim Smith. (M12-C400-D7)

LaFollette, Tenn. SKYWAY DR. Exec: Cherokee Amuse. Ct. (M12-C300-D7)

Lebanon, Tenn. CEDAR VALLEY DR. Exec: Cedars of Lebanon Theatre, Inc. (M12-C220-D7)

Lewisburg, Tenn. HIWAY 50 DR. Exec: Lewisburg Theatres. (M12-C350-D7)

Lewisburg, Tenn. SOUTHERN AIR DR. Exec: Dr. Wm. H. Hendrix. (M12-C300-D7)

Loudon, Tenn. COLE DR. Exec: W. H. and J. J. Cole. (M12-C200-D7)

Madison, Tenn. MONTAGUE DR. Exec: Chas. H. Keuntz. (M12-C600-D7)

Madisonville, Tenn. MADISON DR. Exec: J. H. Hill. (M12-C250-D7)

Manchester, Tenn. PLAZA DR. Exec: W. E. McDonald, J. W. Hamaker. (M12-C500-D7)

McMinnville, Tenn. BEN LOMAND DR. Exec: Med-Tenn. Amusement Co. (M12-C400-D7)

Morristown, Tenn. SKYLINE DR. Exec: G. D. Baker. (M12-C189-D6)

Nashville, Tenn. CRESCENT DR., Murfreesboro Pike. Exec: Kermit Stengel, Crescent Amuse. Ct. (M7-C710-D7)

Nashville, Tenn. COLONIAL DR. Exec: Joe Hart. (M7-C600-D7)

Nashville, Tenn. SKYWAY DR. Exec: Crescent Amuse. Ct. (M12-C600-D7)

Newport, Tenn. DRIVE-IN TH. Exec: Newport Th. (M12-C200-D7)

Oak Ridge, Tenn. SKYWAY DR., Oak Ridge Wheeler Hollingsworth. (M12-C270-D7)

Oak Ridge, Tenn. ELZA DR. Exec: Mars and Turnpike, P. O. Box O. Exec: W. J. Hatfield. (M9-C300-D7)

Pulaski, Tenn. MOONGLOW DR. Exec: Moonglow Amuse. (M12-C375-D7)

Rogersville, Tenn. HI-LAND DR. Exec: Cecil E. Acuff. (M12-C200-D7)

Shelbyville, Tenn. 41 DR. Exec: J. M. Miller. (M10-C315-D6)

Sparta, Tenn. PARK-A-WAY, Sparta-Cookeville Hwy. Exec: Jack Mitchell. (M12-C300-D7)

Sweetwater, Tenn. SKYLARK DR. Exec: Gay Amuse. (M12-C200-D7)

Tullahoma, Tenn. ARNOLD DR. Exec: Med-Tenn. Amusement Co. (M12-C500-D7)

BOSTON TERRITORY

Maine

Acton, Me. ACTON DR. Exec: L. W. Bucklin, Sanford, Me. (M7-C* -D7)

Auburn, Me. DANVILLE DR. Exec: Collin and Wood. (M7-C550-D7)

Bangor, Me. BANGOR DR. Exec: Graphic Circuit. (M7-C900-D7)

Bangor, Me. BREWER DR. Exec: E. M. Loew Ct. (M6-C800-D7)

Branson, Me. STARLITE DR. Exec: J. W. Shinn and Mrs. Guba Plympton. (M6-C* -D7)

Brunswick, Me. BOUDOIN DR. Exec: E. Boragine. (M7-C300-D7)

Brunswick, Me. BRUNSWICK DR. Exec: George R. Gould, 91 Brentwood St., Portland 5, Me. (M6-C450-D7)

Caribou, Me. POLARIS DR. Exec: Lewis F. Christie. (M7-C500-D7)

Danville, Me. DRIVE-IN TH. Exec: Higgins Ct. (M7-C450-D7)

Houlton, Me. BORDERLAND AUTO TH., US Rt. 1. Exec: H. Peabody and Lewis Webber. (M6-C450-D7)

Kennebunk, Me. KENNEBUNK DR. Exec: Mrs. Katherine Avery. (M6-C350-D7)

Lewiston, Me. LEWISTON DR., P.O. General Delivery. Exec: Lockwood and Gordon Ct., Boston, Mass. (M7-C1000-D7)

Madawaska, Me. MADAWASKA DR. Exec: E. Micheaud. (M6-C300-D7)

Manchester, Me. AUGUSTA DR. Exec: E. M. Loew Theatre Ct. (M6-C400-D7)

Milo, Me. MILO DR. Exec: Mrs. E. Mills. (M7-C450-D7)

Rumford, Me. RUMFORD DR. Exec: E. Pollard. (M7-C400-D7)

Saco, Me. SACO AUTO DR., Rt. 1. Exec: Eugene Boragine. (M5-C300-D7)

Sanford, Me. SANFORD DR., P.O. Box 415, 4 School St., Ogunquit, Me. Exec: Russell Martin. (M7-C400-D7)

Scarboro, Me. PORTLAND DR., P.O. Box 7. Exec: Lockwood and Gordon Ct., Boston, Mass. (M7-C950-D7)

Sebago Lake, Me. DRIVE-IN TH. Exec: Eugene Boragine. (M7-C250-D7)

Van Buren, Me. DRIVE IN. Exec: Mrs. Lillian Keegan. (M6-C350-D7)

Waterville, Me. WINSLOW DR., Augusta Rd. Exec: Lockwood and Gordon Ct. (M6-C700-D7)

West Enfield, Me. DRIVE-IN TH. Exec: Myer and Wagman. (M7-C250-D7)

Yarmouth, Me. DRIVE-IN TH. Exec: Lou Pachand. (M7-C200-D7)

Massachusetts

Adams, Mass. HOOSAC DR. Exec: Boylston Dr. Corp. (M6-C500-D7)

Avon, Mass. AVON DR. Exec: Interstate Ct. (M7-C800-D7)

Bellingham, Mass. BELLINGHAM AUTO TH., Pulaski Blvd. Exec: Richter and Sperling. (M6-C200-D7)

Braintree, Mass. QUINTREE DR. Exec: Rifkin Circuit. (M7-C500-D7)

Chicopee Falls, Mass. AIR-LINE DR. Exec: John S. Coughlan, 895 Worthington St., Springfield. (M6-C1000-D7)

Dalton, Mass. BRIGGS OPEN AIR TH., Rt. 9. Exec: Briggs Open Air Thea., Inc. (M6-C500-D7)

Dartmouth, Mass. DARTMOUTH AUTO TH., Rt. 6, Cross Rd. Exec: W. Yamin. (M8-C500-D7)

Dedham, Mass. DEDHAM DR., Elm St., Rt. 1. Exec: Michael Redstone. (M8-C1000-D7)

Dennis, Mass. DENNIS DR. Exec: Frank Calvi. (M8-C600-D7)

Dorchester, Mass. NEPONSET DR. Exec: Michael Redstone. (M6-C1000-D7)

Fitchburg, Mass. WHALOM PARK DR., Electric Ave. Exec: Elivio Williams. (M7-C400-D7)

Gardner, Mass. MOHAWK DR. Exec: Bob Zerinsky and Assoc. (M7-C500-D7)

Haverhill, Mass. RIVERVIEW DR., 901 River Rd. Exec: S. Arakelian. (M5-C400-D7)

Holyoke, Mass. WEST SIDE DR. Exec: E. M. Loew Ct. (M7-C800-D7)

Kingston, Plymouth, Mass. PLYMOUTH DR., Plymouth Hwy. Exec: E. M. Loew, Lawrence, Laskey. (M7-C625-D7)

Lanesboro, Mass. SUNSET PARK AUTO TH., Rt. 7. Exec: L. Bryer. (M8-C300-D7)

Lowell, Mass. LOWELL DR. Exec: Dick Edwards. (M6-C300-D7)

Lynn, Mass. OPEN AIR TH., Rt. 1A. Exec: E. M. Loew Ct. (M7-C500-D7)

Medford, Mass. MEADOW GLEN DR., 3850 Mystic Valley Pkwy. Exec. Affiliated Agy. (M7-C1000-D7)

Mendon, Mass. MENDON AUTO TH., P.O. Box 274. Exec: Fred Parker. (M6-C100-D7)

Methuen, Mass. MERRIMAC DR., Merrimac Park Dr. Exec: E. M. Loew Ct. (M7-C325-D7)

Natick, Mass. NATICK AUTO TH. Exec: Phil Smith Ct. (M7-C1000-D7)

North Attleboro, Mass. BORO DR. Exec: Joe Stanzler, 300 Morris Ave., Providence, R. I. (M7-C875-D7)

Northfield, Mass. AUTO TH. Exec: C. Nilman, Shelburne Falls, Mass. (M6-C300-D7)

North Reading, Mass. READING DR. Exec: American Theatre Corp. (M8-C1000-D7)

North Wilbraham, Mass. PARKWAY DR., Boston Rd. Exec: David Willig. (M7-C750-D7)

Palmer, Mass. MET AIRPORT DR. Exec: L. Micelli. (M6-C300-D7)

Raynham, Mass. DRIVE IN, Rt. 128. Exec: J. Guarino. (M6-C600-D7)

Revere, Mass. REVERE DR., Squire Rd. Exec: Michael Redstone. (M7-C400-D7)

Salisbury, Mass. SALISBURY AUTO TH., Beach Rd. Exec: Al Rudenstein. (M8-C400-D7)

Saugus, Mass. SAUGUS DR., Rt. 1. Exec: American Theatres Corp. Ct., Boston, Mass. (M7-C400-D7)

Seekonk, Mass. BAY STATE DR., Rt. 6. Exec: Romano Brothers. (M8-C500-D7)

Shelburne Falls, Mass. COMMUNITY DR. Exec: C. Nilman. (M8-C300-D7)

Shrewsbury, Mass. OPEN AIR AUTO TH., Rt. 9. Exec: American Theatres Corp. Ct., Boston, Mass. (M7-C550-D7)

Somerset, Mass. SOMERSET OPEN AIR DR. Exec: Maurice Safner, Joseph L. Schwartz, Theodore Rosenblatt. (M7-C560-D7)

Southampton, Mass. RED ROCK DR. Exec: Alex Yamakowski. (M6-C400-D7)

Southampton, Mass. DRIVE-IN TH. H. Higgins. (M8-C275-D7)

South Deerfield, Mass. VALLEY VIEW DR., Rt. 116, Conway Rd. Exec: Edward J. King, 52 Grinnell St., Greenfield, Mass. (M6-C250-D7)

Sturbridge, Mass. DOLLY DR. Exec: Peter J. Marrone. (M6-C400-D7)

Sutton, Mass. MOTOR IN TH., Providence Rd. Exec: Wilfred Bernard. (M7-C500-D7)

Turner Falls, Mass. PARK VILLA DR. Exec: Frank Kuzmeskus, Montague Center, Mass. (M6-C350-D7)

Tyngsboro, Mass. TYNGSBORO DR. Exec: George Abdallag, 203 Branch St., Lowell, Mass. (M6-C300-D7)

Uxbridge, Mass. QUAKER DR. Exec: N. Eisner. (M7-C500-D7)

Wareham, Mass. WAREHAM DR. Exec: Rifkin Circuit. (M7-C500-D7)

West Boylston, Mass. WORCESTER DR. Exec: E. M. Loew Ct. (M7-C800-D7)

Westfield, Mass. SUNDOWN AUTO DR., Rt. 202. Exec: Owen Holmes. (M7-C660-D7)

West Pittsfield, Mass. BERKSHIRE DR., 1501 W. Housatonic St. Exec: E. Thompson. (M6-C600-D7)

West Springfield, Mass. RIVERDALE DR., 935 Riverdale. Exec: E. M. Loew Ct. (M6-C600-D7)

West Springfield, Mass. WEST SPRINGFIELD DR. Rt. 20. Exec: American Thea. Ct. (M6-C800-D7)

Weymouth, Mass. DRIVE IN, Rt. 3A. Exec: American Theatres Corp. Ct., Boston, Mass. (M6-C600-D7)

New Hampshire

Alton, N. H. ALTON DR. Exec: Geo. Garrett. (M6-C* -D7)

Bethlehem, N. H. TWIN MOUNTAIN DR. Exec: Armand Duranleau. (M6-C400-D7)

Claremont, N. H. CLAREMONT DR., Rts. 103 and 11. Exec: Robert Zerinsky. (M7-C500-D7)

Concord, N. H. CONCORD DR. Exec: Lockwood and Gordon Enterprises. (M6-C500-D7)

Gorham, N. H. GRAND-VIEW DR. Exec: E. M. Loew Ct., Boston, Mass. (M6-C400-D7)

Hooksett, N. H. SKI-RAY DR. Exec: E. M. Loew Ct. (M6-C500-D7)

Keene, N. H. KEENE DR. Exec: Jos. Mathieu. (M6-C400-D7)

Laconia, N. H. WEIRS DR. Exec: Henry Gaudette. (M6-C550-D7)

Manchester, N. H. DRIVE IN. Exec: Jacob Asadorian. (M6-C500-D7)

Manchester, N. H. PINE ISLAND PARK DR., Rt. 3A and 18. Exec: J. A. Sayer. (M3-C300-D7)

Nashua, N. H. MERRIMAC DR. Exec: J. E. Bronstein. (M6-C500-D7)

North Conway, N. H. WHITE MOUNTAIN DR. Exec: Carroll A. Hill. (M6-C250-D7)

Rochester, N. H. SUNSET DR. Exec: James Nadeau. (M6-C400-D7)

Salem Depot, N. H. SALEM DR. Exec: Lockwood and Gordon Ct. (M8-C450-D7)

Somersworth, N. H. STARWAY DR., Rt. 16, P.O. Box 1881. Exec: J. A. Sayer. (M7-C400-D7)

Warner, N. H. SKI-TOW DR. Exec: William Lussier. (M6-C200-D7)

Rhode Island

Cranston, R. I. CRANSTON AUTO TH., Oaklawn Ave. Exec: William Deitch. (M8-C1000-D7)

Johnston, R. I. PIKE DR., Hartford Ave. Exec: L. Breyer. (M8-C* -D7)

Providence, R. I. PROVIDENCE DR., Rt. 1. Exec: E. M. Loew Ct. (M9-C600-D7)

Westerly, R. I. DRIVE-IN TH. Exec: Wm. Perrie. (M8-C500-D7)

Vermont

Ascutney, Vt. MIDWAY DR. Exec: Penny Theatre Co. (M7-C* -D7)

Bellows Falls, Vt. BELMONT DR. Exec: R. M. Stocker. (M5-C400-D7)

Bennington, Vt. BENNINGTON DR. Exec: A. R. Wellard, Hoosick Falls, N. Y. (M5-C250-D7)

Berlin, Vt. TWIN CITY DR. Exec: R. M. Cody. (M6-C450-D7)

Burlington, Vt. SUNSET DR., Rt. 127. Exec: John Gardiner. (M5-C600-D7)

Castleton, Vt. FT. WARREN DR. Exec: Sylvan Leff. (M6-C350-D7)

Colchester, Vt. MALLET BAY DR. Exec: Gordon Jarris. (M8-C360-D7)

Derby, Vt. DERBY PORT DR. Exec: Green Mountain Dr. Ths. (M6-C300-D7)

Milton, Vt. DRIVE IN. Exec: A. A. Viens. (M6-C300-D7)

Morrisville, Vt. DRIVE-IN TH. Exec: D. H. McNally. (M8-C150-D7)

North Bennington, Vt. DRIVE-IN TH. Exec: J. Miller. (M8-C375-D7)

North Montpelier, Vt. HOMESTEAD DR. Exec: John Coffin. (M8-C150-D7)

Rutland, Vt. RUTLAND DR. Exec: Norman A. Grimshaw and Edwin A. Morgan. (M6-C360-D7)

St. Albans, Vt. ST. ALBANS DR., RFD #1. Exec: R. J. Ryan and Ralph W. Dexter. (M5-C550-D7)

St. Johnsbury, Vt. BLUE MOON DR. Exec: Avon R. Atkins. (M6-C* -D7)

BUFFALO TERRITORY

New York

Allegany, N. Y. ALLEGANY DR. Exec: Louis Drew and Harry Berkson. (M7-C452-D7)

Angola, N. Y. GRANDVIEW DR. Evans Road, Rt. 5. Exec: Robert E. Reitler. (M12-C800-D7)

Athol Springs, N. Y. SKYWAY-LAKESHORE, Rt. 5. Exec: W. Brett. (M7-C720-D7)

Auburn, N. Y. EAST DR. Exec: Hubert P. Wallace. (M7-C500-D7)

Auburn, N. Y. FINGER LAKES DR., 67 N. Fulton St. Exec: Don Wilson. (M7-C290-D7)

Batavia, N. Y. SKYWAY-GENESEE DR. Exec: Wm. Brett. (M7-C500-D7)

Bath, N. Y. BATH DR., P.O. Box 649. Exec: Joseph J. Murphy. (M7-C375-D7)

Bemus Point, N. Y. CHAUTAUQUA DR., Rt. 17. Exec: Blatt Bros. Thea. Ct., Pittsburgh, Pa. (M7-C250-D7)

Blasdell, N. Y. STAR DR., Lake Ave. Exec: Mrs. A. Schick. (M7-C320-D7)

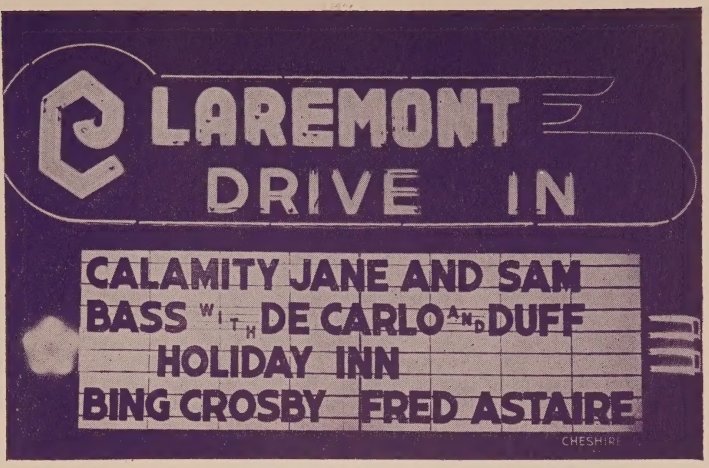
Canandaigua, N. Y. PARKWAY DR., Rt. 5. Exec: Slotnick and Gandell. (M7-C650-D7)

Cheektowaga, N. Y. AERO DR. Exec: Arthur Bailey. (M7-C500-D7)

Cheektowaga, N. Y. BROADWAY DR. Exec: Atlas and Spandow. (M7-C750-D7)

Cheektowaga, N. Y. BUFFALO DR., Harlem Rd. Exec: James Kelly or Wintner, Union Commerce Bldg., Cleveland 14, O. (M7-C650-D7)

Cicero, N. Y. NORTH DR., N. Syracuse-Cicero Rd. Exec: McConnell Read Corp., 116 S. Salina St., Syracuse, N. Y. (M6-C600-D7)



A SIZEABLE ATTRACTION PANEL BY WAGNER has been installed at the Claremont Drive-In, Claremont, N. H. The board has openings 57" high and 15' long to accommodate four rows of letters.

Dryden, N. Y. DRYDEN DR. Exec: H. L. Berinstein. (M7-C600-D7)

Ebenezer, N. Y. PARK DR. Exec: Arthur Bailey. (M12-C440-D7)

Elmira, N. Y. BIG FLATS DR., Box 929. Exec: H. L. Berinstein. (M7-C500-D7)

Endicott, N. Y. GEORGE F. DR., George F. Hwy. Exec: Mecca Ths. Ct. (M7-C600-D7)

Gasport, N. Y. LOCKPORT DR., Rt. 31. Exec: Walter Dion and Son. (M7-C250-D7)

Geneva, N. Y. SENECA DR. Exec: Louis Drew. (M8-C500-D7)

Greece, N. Y. CENTRAL DR., 1700 Long Pond Rd. (Rochester P.O.). Exec: William Tishkoff. (M7-C980-D7)

Greece, N. Y. LAKE SHORE DR., Ling Rd., Rochester 12, N. Y. Exec: Jack Robbins. (M7-C500-D7)

Hornell, N. Y. STARLITE DR., P.O. Box 36. Exec: Louis Drew. (M7-C500-D7)

Jamestown, N. Y. LAKEWOOD DR. Exec: Blatt Bros. Ct., Pittsburgh, Pa. (M12-C400-D7)

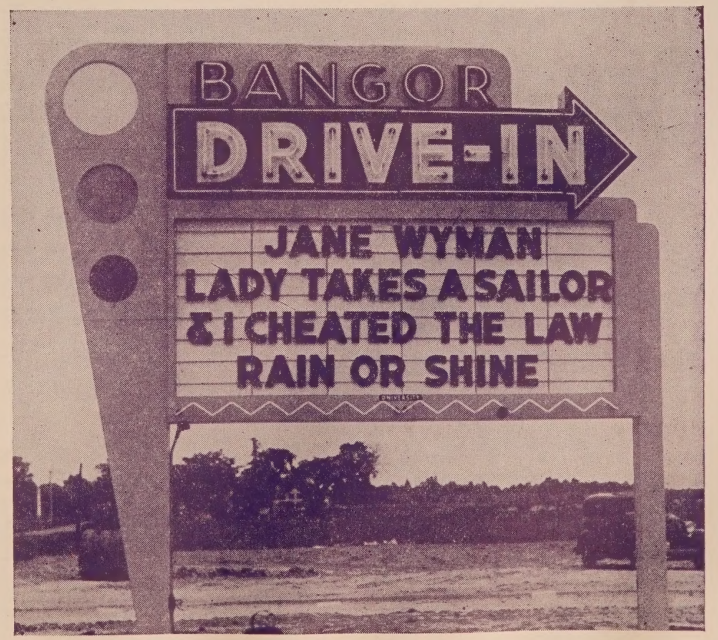
Jamestown, N. Y. SUPER 17 DR. Exec: Herb Ochs and Assoc. (M7-C500-D7)

Limestone, N. Y. LIMESTONE DR. P. O. Box 707, Kane, Pa. Exec: Wayne Holmes, Pres. (M7-C400-D7)

Middleport, N. Y. SUNSET DR. Exec: Alex Stornelli. (M7-C300-D7)

Minetto, N. Y. MIDWAY DR., Rt. 48. Exec: R. C. Canter. (M7-C450-D7)

IMPRESSIVE IS THE WORD FOR THIS VIEW of a large attraction panel installed at the Bangor Drive-In, Bangor, Me. Four rows of Wagner 4" and 10" plastic letters and 41" Wagner frames have been used.



ALTHOUGH LOCATED IN THE SAME BUILDING, the refreshment stand and projection booth at the 892-car Bankhead Drive-In, Atlanta, Ga., are separated by an open-air patio where patrons may relax.

Niagara Falls, N. Y. STARLITE DR., Military Rd. Exec: Robert and Richard Hayman. (M8-C730-D7)

Nimmonsburg, N. Y. FRONT DR., 1260 Front St. Exec: Herbert Nittke. (M7-C722-D7)

Perry, N. Y. SILVER LAKE DR., Rt. 39, Perry-Castle Rd. Exec: Harry K. Martin. (M7-C400-D7)

Rochester 11, N. Y. ROCHESTER DR., 1200 Scottsville Rd. Exec: J. J. Kelly or Wintner, Union Commerce Bldg., Cleveland 14, O. (M7-C726-D7)

Stafford, N. Y. BATAVIA DR. Exec: Ethan Lenhart. (M7-C400-D7)

Syracuse, N. Y. DE WITT DR. Exec: De Witt Drive-In Theatres. (M7-C950-D7)

Syracuse, N. Y. KALLET DR. Exec: O. J. Kallet. (M7-C800-D7)

Tonawanda, N. Y. DELAWARE DR., 4100 Delaware Ave. Exec: Louis Drew. (M7-C1000-D7)

Tonawanda, N. Y. SHERIDAN DR. Exec: Irving Cohen. (M7-C700-D7)

Tonawanda, N. Y. SKYWAY-NIAGARA, Niagara Falls Blvd. Exec: Wm. Brett. (M7-C700-D7)

Van Buren Point, N. Y. VAN BUREN DR., RFD No. 2, Dunkirk, N. Y. Exec: Irving Cohen. (M7-C800-D7)

Wallington, N. Y. SKYWAY DR., Rt. 104. Exec: Thomas B. Nephew. (M7-C400-D7)

West Henrietta, N. Y. STARLITE DR. Exec: Don Stevenson, Rochester 11, N. Y. (M7-C600-D7)

West Webster, N. Y. EMPIRE DR., Rochester-Webster Rd. Exec: Graydon Hodges. (M7-C830-D7)

CHARLOTTE TERRITORY

North Carolina

Albemarle, N. C. ALBEMARLE DR., R.F.D. #2. Exec: G. L. Faw. (M8-C150-D7)

Albemarle, N. C. BADIN ROAD DR., Rt. 2, Hwy. 27. Exec: G. L. Faw. (M8-C150-D7)

Alexis, N. C. MOONLIGHT DR. Exec: Fred Stallings, Jr. (M8-C* -D7)

Archdale, N. C. TARHEEL DR. Exec: Paul Jones, Route #3, High Point, N. C. (M8-C200-D7)

Asheboro, N. C. 220 DR., Rt. 220. Exec: Consolidated Ct., P. O. Box 2446, Charlotte, N. C. (M12-C500-D7)

Asheville, N. C. DREAMLAND DR., Hwy. 70, Rt. 74 S.E. Old Black Mtn. Hwy. Exec: Franklin H. Frady, 94 Cox Ave. (M8-C600-D7)

Aulander, N. C. STARLITE DR. Exec: A. P. Lassiter. (M8-C200-D7)

Beaufort, N. C. EAST DR. Exec: Victor Wicklizer. (M8-C250-D7)

Belmont, N. C. BELMONT DR., Hwy. 223. Exec: B. Boling. (M8-C150-D7)

Benson, N. C. STARVIEW DR. Exec: Mr. and Mrs. Alonzo Parrish. (M8-C150-D7)

Bessemer City, N. C. DRIVE IN, R.F.D. No. 2, Kings Mountain Dr. Exec. R. G. Stinett. (M8-C200-D7)

Boone, N. C. SKY-VUE DR. Exec: A. E. Hamby, Jr., J. W. Hodges, Jr. (M8-C200-D7)

Brevard, N. C. BREVARD DR. Exec: S. D. Moore. (M8-C200-D7)

Brevard, N. C. STAR DR. Exec: S. G. Siniard. (M8-C200-D7)

Bryson City, N. C. DRIVE IN. Exec: E. Y. Neil, c/o Dr-In, Sylva, N. C. (M8-C150-D7)

Burlington, N. C. BUR-GRA DR., 1924 Maple Ave. Exec: A. F. Floyd. (M8-C225-D7)

Burlington, N. C. DRIVE IN, Hwy. 87, Box 707. Exec: Consolidated Ct., P. O. Box 2446, Charlotte, N. C. (M12-C400-D7)

Canton, N. C. CANTON DR. Exec: Clayton Mehaffey. (M8-C300-D7)

Chadbourn, N. C. LUCKY STAR DR. Exec: D. W. Smith. (M8-C200-D6)

Chapanoke, N. C. DRIVE-IN TH. Exec: E. S. Holland. (M8-C150-D7)

Chapanoke, N. C. ECHO DR. Exec:* (M8-C* -D7)

Chapel Hill, N. C. PARKVUE DR. Exec: J. W. Thompson. (M8-C200-D7)

Charlotte, N. C. ALBEMARLE ROAD DR. Exec: Harris Robinson, Dixie Drive-In Theatres Ct., Atlanta 3. (M12-C300-D7)

Charlotte, N. C. NORTH 21 DR., P. O. Box No. 1689. Exec: H. B. Meiselman. (M8-C350-D7)

Charlotte, N. C. NORTH 29 DR., Hwy. 29, P.O. Box 1262. Exec: Harris Robinson, Dixie Drive-In Theatres Ct., Atlanta 3. (M12-C600-D7)

Charlotte, N. C. SOUTH 29 DR., P.O. Box 1262. Exec: Harris Robinson, Dixie Drive-In Theatres Ct. Atlanta 3. (M8-C500-D7)

Charlotte, N. C. YORK ROAD DR., 702 W. 5th St. Exec: Jack Wadsworth. (M12-C400-D7)

Chinquapin, N. C. HULA DR. Exec: T. F. Sanderson. (M8-C150-D7)

Chocowinity, N. C. CHO-CO DR. Exec: Floyd Cox, Box 495, Washington, N. C. (M7-C200-D7)

Clinton, N. C. KITTY FORK DR., Rt. #3. Exec: T. M. Gale. (M8-C150-D7)

Clinton, N. C. MIDWAY DR. Exec: R. D. Nance. (M8-C225-D7)

Clinton, N. C. MOTOR PARK DR., Hwy. 42, R.R. 1. Exec: C. B. Hayworth. (M7-C200-D7)

Concord, N. C. AIRPORT DR., Hwy. 73. Exec: Lewis K. Whitley, Elmedo De Diego. (M8-C300-D6)

Concord, N. C. CAROLINA DR., Hwy. 29A, P.O. Box 167. Exec: Jack Biggart. (M8-C200-D7)

Concord, N. C. CONCORD DR., Hwy. 29. Exec: J. C. Willis. (M8-C250-D7)

Concord, N. C. STARLITE DR. Exec: J. O. Willis. (M8-C200-D7)

Conover, N. C. NEW-CON DR. Exec: Consolidated Ct., P.O. Box 2446, Charlotte, N. C. (M12-C200-D7)

Dobson, N. C. DOBSON DR. Exec: J. J. Booth, Jr., Walnut Cove, N. C. (M8-C200-D7)

Drexel, N. C. HI PEAK DR. Exec: R. D. Drum. (M7-C175-D7)

Dunn, N. C. CENTER VIEW DR. Exec: H. H. Jordan. (M7-C150-D7)

Durham, N. C. CARO-DUKE DR., Chapel Hill Rd. Exec: W. T. Marshall, Jr. (M8-C300-D7)

Durham, N. C. DRIVE-IN TH. Exec: B. Mitchell. (M8-C300-D7)

Durham, N. C. MIDWAY DR., Hwy. 70, Box 2142. Exec: J. W. Wallace. (M8-C300-D7)

Durham, N. C. SKYVIEW DR. P. O. Box No. 2142. Exec: J. W. Wallace. (M8-C275-D7)

Durham, N. C. STARLIGHT DR., Hwy. 15, New Oxford Hwy. Exec: A. C. Riggsbee, 2144 Geer St. (M8-C300-D7)

Edenton, N. C. HWY. 17 DR. Exec: Jimmy Earnhardt, Taylor Theatre. (M8-C175-D7)

Elkin, N. C. SCENIC DR. Exec: Mr. Gwynn. (M8-C450-D6)

Enka, N. C. WEST ASHEVILLE AUTO TH. Exec: W. C. Macon. (M8-C350-D7)

Fairmont, N. C. DRIVE-IN TH. Exec: Mr. McKenzie. (M8-C200-D7)

Fairmont, N. C. NO. 41 DR., Hwy. 41. Exec: Lewis Whitley. (M7-C200-D7)

Fayetteville, N. C. BOULEVARD DR., Hwy. 87, P.O. Box 58, Rt. 4. Exec: Howard McNally. (M7-C200-D7)

Fayetteville, N.C. SKYVIEW DR., Hwy. 15A, P.O. Box 289. Exec: James G. Wellons. (M7-C350-D7)

Forest City, N. C. DRIVE-IN TH. Exec: W. F. Campbell. (M8-C300-D7)

Forest City, N. C. TRI-CITY DR., Rt. 2, P.O. Box 42A. Exec: C. W. Carpenter. (M8-C150-D6)

Fuquay Springs, N. C. FIVE POINTS DR., Hwy. 42. Exec: R. E. Boykin. (M7-C250-D6)

Gastonia, N. C. GASTONIA DR., Hwy. 321, Rt. 1, Box 51. Exec: F. B. Griggs. (M8-C500-D7)

Gastonia, N. C. SUNSET DR. Exec: F. B. Griggs. (M8-C300-D7)

Gastonia, N. C. TOWER DR., Wilkinson Blvd. Exec: Consolidated Ct., P.O. Box 2446, Charlotte. (M12-C450-D7)

Goldsboro, N. C. GOLDSBORO DR., Hwy. 70, Box 902. Exec: A. F. Sams. (M7-C150-D7)

Goldsboro, N. C. MODEL DR., Rt. 5. Exec: A. P. Hinnant. (M8-C150-D7)

Grantsboro, N. C. GRANTSBORO DRIVE IN, Box 78. Exec: R. L. Bennett. (M7-C150-D6)

Greensboro, N. C. MARTIN DR. Exec: C. O. Martin. (M8-C250-D7)

Greensboro, N. C. NORTH DR., Hwy. 29, P.O. Box 732. Exec: Harris Robinson, Dixie Drive-In Theatres Ct., Atlanta 3. (M8-C500-D7)

Greensboro, N. C. SOUTH DR., P.O. Box 732. Exec: Harris Robinson, Dixie Drive-In Thea. Ct., Atlanta 3. (M8-C600-D7)

Greensboro, N. C. SUNDOWN DR. Exec: Harry Stanley. (M8-C125-D7)

Greenville, N. C. SOUTH 11 DR., Hwy. 11, Rt. 2, Box 148. Exec: Byron Adams, Wm. S. Briggs. (M7-C300-D7)

Guilford, N. C. PIEDMONT DR., P.O. Box 116. Exec: C. L. French. (M8-C400-D6)

Hamlet, N. C. HAMLET DR. Exec: C. W. Carpenter, Jr. (M8-C225-D7)

Havelock, N. C. DINGHOU DR., P.O. Box 285. Exec: W. T. Robertson. (M8-C200-D7)

Henderson, N. C. HENDERSON DR., Hwy. 7, Box 554. Exec: Roy Turner and Bill Gregory. (M7-C350-D6)

Henderson, N. C. MOON-GLO DR. Exec: S. S. Stevenson. (M8-C360-D7)

Hendersonville, N. C. HEN-VILLE DR. Exec: Ben Pless. (M8-C300-D7)

Hickory, N. C. FUN-LAN DR. Exec: Dick Eason. (M8-C300-D7)

Hickory, N. C. HICKORY DR., Hwy. 64. Exec: J. P. Mull. (M8-C200-D7)

Hickory, N. C. SPRING ROAD DR., P.O. Box 343. Exec: D. J. VanCourt. (M8-C200-D7)

High Point, N. C. MOONGLOW DR. Exec: C. W. Grubbs. (M8-C225-D7)

High Point, N. C. NORTH SIDE DR. Exec: W. E. Thrush. (M12-C200-D7)

Hudson, N. C. DRUMS DR., Hwy. 321. Exec: R. D. Drum, R.F.D. #1, Lenoir, N. C. (M8-C150-D6)

Huntersville, N. C. N. 21 DI. Exec: Huntsville Ths. Inc. (M8-C250-D7)

Jackson, N. C. DRIVE IN. Exec: R. C. Whitehurst. (M8-C175-D7)

Jacksonville, N. C. DRIVE IN, Hwy. 17, P.O. Box 62. Exec: N. J. Kellum. (M7-C150-D7)

Jacksonville, N. C. MARINE DR. Exec: John M. Kime. (M8-C300-D7)

Jefferson, N. C. DRIVE-IN TH. Exec: R. B. Adams, N. Wilkesboro, N. C. (M8-C200-D7)

Kannapolis, N. C. PARK IN, Cannon Blvd. Exec: H. H. Everett, Everett Enterprises Ct., Charlotte. (M8-C450-D7)

Kernersville, N. C. STARLITE DR. Exec: Jas. Adams, Jr. (M8-C175-D7)

King, N. C. KING DR. Exec: D. E. Gwynn, Eden Ths., Leaksville, N. C. (M7-C300-D6)

Kinston, N. C. BROADWAY DR. Exec: C. A. Broadway. (M8-C225-D7)

Kinston, N. C. NEW BERN DR., Hwy. 70. Exec: E. S. Holland. (M7-C150-D7)

Landis, N. C. PLAZA DR. Exec: R. C. Saunders. (M8-C200-D6)

Laurel Hill, N. C. AUTO DR., Hwy. 74. Exec: Tom Britt. (M8-C200-D7)

Laurinburg, N. C. LAUR-MAR DR., Hwy, 74. Exec: L. J. Whitley. (M8-C150-D6)

Laurinburg, N. C. SKYLINE DR. (CLO.) Exec: T. W. Britt. (M8-C825-D7)

Leaksville, N. C. EDEN DR. Exec: D. E. Gwynn. (M8-C200-D7)

Lenoir, N. C. LENOIR DR. Exec: W. P. Clark, 133 Torrence St. (M8-C300-D7)

Lenoir, N. C. CAROLINA DR. Exec: J. R. Bolick. (M8-C300-D7)

Lenoir, Saw Mills, N. C. SKYLIGHT DR., Box 304. Exec: Mrs. Jas. Griggs, Jr., Box 304, Lenoir, N. C. (M8-C250-D7)

Lexington, N. C. LEXINGTON DR., Rt. 5. RFD No. 5. Exec: John Callahan. (M8-C175-D7)

Liberty, N. C. LIBERTY DR., Hwy. 49. Exec: D. C. Swain. (M8-C250-D6)

Lillington, N. C. CRUISE IN TH., Hwy. 421, Lillington Airport. Exec: A. J. Collins. (M7-C250-D6)

Lincolnton, N. C. FRIENDLY DR., Hwy. 321. Exec: Ben Nation and F. B. Griggs. (M8-C200-D6)

Lincolnton, N. C. ROSELAND DR., Hwy. 27. Exec: W. Ray Chapman. (M8-C250-D6)

Lincolnton, N. C. STARLITE DR., Hwy. 321. Exec: A. E. Miller. (M8-C500-D7)

Locust Level, N. C. LOCUST DR. Exec: R. W. Barbee, RFD No. 1, Stanfield, N. C. (M8-C150-D7)

Louisburg, N. C. CARVIEW DR. Exec: A. F. Sams, Jr., Statesville Theatre Corp. (M8-C250-D7)

Lumberton, N. C. STARLITE DR., Hwy. 74. Exec: Jerry Mundy. (M7-C150-D6)

Madison, N. C. DRIVE IN, Hwy. 220. Exec: J. T. Baker. (M8-C175-D6)

Mamers, N. C. MELODY DR. Exec: Ernest Clark. (M8-C75-D7)

Merry Hill, N. C. MIDWAY DR., Hwy. 45. Exec: M. B. Perry, Colerain, N. C. (M7-C196-D7)

Mocksville, N. C. DAVIE DR., Avon St. Exec: N. S. Chaffin. (M8-C250-D7)

Monroe, N. C. MOONLIGHT DR., Hwy. 74. Exec: Clifford Faw. (M8-C150-D7)

Mooresville, N. C. MOORESVILLE-DAVIDSON DR., Hwy. 21. Exec: W. B. Brice. (M8-C350-D6)

Mooresville, N. C. STARLITE DR. Exec: Dale Groom, Jr. (M8-C300-D7)

Morehead City, N. C. OCEAN PARK DR. Exec: J. M. Kime, Alice Theatre, Roseboro, N. C. (M8-C200-D7)

Morganton, N. C. SKYLINE DR., Hwy. 64. Exec: Jos. J. Accardi and Spake. (M8-C250-D6)

Mount Airy, N. C. NEW DR., Hwy. 52. Exec: E. L. Davis. (M8-C250-D6)

Mt. Holly, N. C. CATAWBA HEIGHTS DR. Exec: Luther Ritchie, Alexis, N. C. (M8-C275-D7)

Mt. Olive, N. C. MOUNT OLIVE DR. Exec: Harry Cooke. (M8-C225-D7)

Nashville, N. C. WHITE'S DR. Exec: E. A. White. (M8-C200-D7)

New Bern, N. C. CRAVER DR. Exec: Ralph O. Pate. (M8-C200-D7)

New Bern, N. C. DRIVE IN, Hwy. 70. Exec: E. S. Holland. (M8-C150-D7)

Newton, N. C. SUNDOWN DR. Exec: R. D. Drum, Frank L. Cline, George W. Murray, P. O. Box 27, Catawba, N. C. (M8-C250-D7)

Newton Grove, N. C. GROVE PKWY. DR. Exec: C. Felton Godwin. (M7-C200-D6)

N. Wilkesboro, N. C. MILLERS CREEK DR. Exec: Roy Cashion. (M8-C200-D7)

N. Wilkesboro, N. C. NORTH WILKESBORO DR., Hwy. 16, Rt. 1. Exec: R. B. Adams. (M8-C150-D6)

Old Fort, N. C. GARDEN CITY DR. Exec: W. C. Macon, Asheville, N. C. (M8-C150-D6)

Oxford, N. C. SKYLINE DR., Henderson Rd., P.O. Box 828. Exec: R. Currin. (M8-C200-D6)

Pilot Mountain, N. C. DRIVE IN. Exec: Gordon and Pell. (M8-C150-D7)

Pink Hill, N. C. MOTOR PARK TH., Hwy. 11, Box 13. Exec. C. B. Hayworth. (M7-C160-D6)

Plymouth, N. C. PLYMOUTH DR. Exec: L. H. Ross, Washington, N. C. (M8-C175-D7)

Point Harbor, N. C. ECH DR. Exec: E. C. Holland. (M8-C* -D7)

Raeford, N. C. 15-A DR., Hwy. 20. Exec: Howard McNally. (M7-C200-D6)

Raleigh, N. C. CAR-RAL DR., Box 1901, High Point, N. C. Exec: C. M. McSwain. (M8-C375-D7)

Raleigh, N. C. FOREST DR., Louisburg Rd. Exec: Consolidated Ct., P.O. Box 2446, Charlotte. (M12-C425-D7)

Raleigh, N. C. TOWER DR., P. O. Box 230, Wendell Hwy. Exec: Wilby-Kincey Ct., Charlotte. (M12-C400-D7)

Red Springs, N. C. AIRPORT DR. Exec: A. C. McSwain. (M8-C200-D7)

Red Springs, N. C. RED SPRINGS DR., P.O. Box 391. Exec: A. C. McSwain. (M8-C200-D7)

Reidsville, N. C. MIDWAY DR. Exec: W. H. Hendrix, Box 672, Greensboro, N. C. (M12-C300-D7)

Richlands, N. C. PARADISE DR. Exec: Dick Sylvester. (M8-C200-D7)

Robbins, N. C. ROBBINS DR. Exec: G. L. Faw. (M8-C175-D7)

Rockingham, N. C. ROCK-HAM DR. Exec: Lewis K. Whitley. (M8-C200-D7)

Rockingham, N. C. SKY-VU DR., Hwy. 74. Exec: Bob Turnbull. (M7-C200-D6)

Rocky Mount, N. C. SKY-VUE DR., Hwy. 64. Exec: Vernon Holder. (M7-C150-D7)

Rocky Mount, N. C. TOWER DR., Tarboro Hwy. Exec: Wilby-Kincey Ct., Charlotte. (M7-C350-D7)

Roseboro, N. C. SKY-TOP DR. Exec: Reuben Harris. (M8-C200-D7)

Roxboro, N. C. CAROLINA DR., Rt. 2. Exec: O. T. Kirby. (M7-C200-D7)

Salisbury, N. C. HITCHING POST DR. Exec: J. W. Mitchell. (M8-C200-D7)

Salisbury, N. C. SALISBURY DR., Albemarle Hwy. 29. Exec: J. W. Martin and S. L. Pinkston. (M8-C200-D7)

Sanford, N. C. SANFORD DR., Hwy. 1. Exec: H. J. Chapman. (M7-C300-D7)

Selma, N. C. SMITH DR. Exec: H. P. Howell, Smithfield, N. C. (M8-C250-D7)

Shelby, N. C. CLEVELAND DR., Hwy. 74. Exec: Paul Reynolds. (M8-C150-D6)

Shelby, N. C. SHELBY DR., Hwy. 18, P.O. Box 346. Exec: C. W. Green. (M8-C250-D6)

Shelby, N. C. SUNSET DR. Exec: Colonial Theatres. (M8-C300-D7)

Siler City, N. C. SILER CITY DR. Exec: Mrs. Runa Greenleaf. (M8-C200-D7)

Skyland, N. C. DRIVE IN, Hwy. 25. Exec: C. K. Carlyle. (M8-C250-D6)

Smithfield, N. C. SMITHFIELD DR., Hwy. 301. Exec: H. P. Howell. (M7-C190-D6)

Southern Pines, N. C. STARVIEW DR., Hwy. 1. Exec: C. A. Huntley. (M7-C200-D7)

Statesville, N. C. STATESVILLE DR. Exec: A. F. Sams. (M8-C300-D6)

Statesville, N. C. VILLA HEIGHTS DR., 1321 W. Front St., Hwy. 21. Exec: S. C. Cline. (M8-C225-D6)

Stedman, N. C. DRIVE-IN TH. Exec: Alonzo Parrish. (M8-C150-D7)

Sylva, N. C. SYLVA DR. Exec: E. Y. Neill. (M8-C200-D7)

Tabor City, N. C. PLAZA DR., Hwy. 701. Exec: D. N. Gore, Box 1411, Loris, S. C. (M7-C175-D6)

Tarboro, N. C. V DR. (CLO.) Exec: C. A. Dandelake. (M7-C250-D6)

Taylorsville, N. C. TAYLORSVILLE DR. Exec: H. B. Fortner. (M8-C175-D6)

Thomasville, N. C. MIDWAY DR., Hwy. 29. Exec: Consolidated Ct., P.O. Box 2446, Charlotte. (M8-C476-D7)

Thrift, N. C. THRIFT DR. Exec: C. H. Faw, Monroe, N. C. (M8-C250-D7)

Troutmans, N. C. DRIVE IN. Exec: J. W. Hill. (M8-C200-D7)

Troy, N. C. BISCOE-TROY DR. Exec: G. L. Faw. (M12-C175-D7)

Tryon, N. C. LAKE LANIER DR. Exec: J. and L. and W. L. Edwards. (M8-C200-D7)

Turkey, N. C. TURKEY DR. (CLO.) Exec: D. D. Brown. (M7-C350-D6)

Wadesboro, N. C. ANSON COUNTY DR., Hwy. 74. Exec: J. F. Medley. (M8-C175-D6)

Walkertown, N. C. DRIVE IN. Exec: J. J. Booth, Jr. (M7-C175-D7)

Wallace, N. C. DRIVE IN, (CLO.) Hwy. 117, Rt. 2, Box 300. Exec: W. E. Thrush. (M7-C200-D7)

Walnut Cove, N. C. WALNUT COVE DR. Exec: Hassel A. Fagg. (M8-C200-D7)

Washington, N. C. PARKVIEW DR., Hwy. 264. Exec: Thomas A. Batemen. (M7-C250-D7)

Waynesville, N. C. WAYNESVILLE DR. Exec: Clayton Mahaffey, Box 113 Clyde, N. C. (M7-C200-D7)

Welcome, N. C. WELCOME DR. Exec: E. E. Kepley and P. H. Phillips. (M8-C300-D7)

Weldon, N. C. STARLIGHT DR. Exec: A. P. Lassiter. (M8-C350-D7)

Wendell, N. C. WENLON DR. (CLO.) Exec: B. W. Allen. (M8-C200-D7)

West Asheville, N. C. ASHEVILLE OUTDOOR DR. Exec: W. C. Macon. (M8-C500-D7)

Whiteville, N. C. STARLIGHT DR., Hwy. 76, Box 188. Exec: Marion Davis. (M7-C175-D7)

Wilmington, N. C. CAROLINA BEACH ROAD DR., Hwy. 42, P.O. Box 1304. Exec: W. E. Thrush, Rt. 2, Box 300A. (M7-C200-D7)

Wilmington, N. C. PARK VIEW DR. Exec: W. E. Thrush. (M8-C400-D7)

Wilmington, N. C. SKYLINE DR. Exec: Chas. D. Holder. (M8-C500-D7)

Wilmington, N. C. WRIGHTSVILLE ROAD DR., Hwy. 74, Box 125. Exec: Irwin Rourk. (M8-C190-D7)

Wilson, N. C. PINE VALLEY DR., 410 Maplewood Ave. Exec: Matthew Surachi. (M8-C250-D7)

Wilson, N. C. STARLITE DR., Hwy. 117. Exec: Roy Champion. (M8-C500-D7)

Wingate, N. C. MOONLIGHT DR. Exec: C. H. Faw, Monroe Drive-In, Monroe, N. C. (M8-C150-D7)

Winston-Salem, N. C. DRIVE-IN TH. Exec: J. D. Horn. (M8-C150-D7)

Winston-Salem, N. C. FLAMINGO DR., Greensboro Rd., Box 2739. Exec: J. W. Cashion. (M12-C500-D7)

Winston-Salem, N. C. ROBINHOOD DR. Exec: C. C. Whickes. (M8-C300-D7)

Winston-Salem, N. C. SKYVIEW DR., Hwy. 421, Konnoak Drive. Exec: Harry Stanley, Box 2066, Greensboro, N. C. (M8-C300-D7)

Winston-Salem, N. C. WINSTON-SALEM DR., 516 W. 28th St. Exec: P. G. McGee. (M8-C300-D7)

Yadkinville, N. C. YADKINVILLE DR. Exec: R. E. Zachery. (M8-C200-D7)

South Carolina

Aiken, S. C. AIKEN DR., Hwy. 278, Box 225. Exec: H. W. Hall. (M7-C150-D7)

Anderson, S. C. ANDERSON DR. Exec: Wilby-Kincey Ct., Charlotte, N. C. (M12-C500-D7)

Anderson, S. C. HIGHWAY 29 DR., Rt. 29. Exec: Wilby-Kincey Ct., Charlotte, N. C. (M8-C300-D6)

Anderson, S. C. SKYWAY DR., Hwy. 178. Exec: W. E. Osteen, 1011 N. Main St. (M8-C372-D6)

Bamberg, S. C. BAMBERG-DENMARK DR., Hwy. 78. Exec: J. C. Kearse. (M8-C100-D6)

Beaufort, S. C. DRIVE IN, Hwy. 21. Exec: H. O. Peoples. (M8-C200-D7)

Beaufort, S. C. GREENLAWN DR., Box 289. Exec: D. S. Polk. (M8-C200-D7)

Bennettsville, S. C. BONDS AUTO DR., Box 129, Hwy. 9. Exec: Walter H. Bonds. (M8-C175-D6)

Calhoun Falls, S. C. SHARON DR. Exec: Wm. Broadwell. (M8-C200-D7)

Camden, S. C. CAMDEN DR. Exec: Chas. Bromley. (M8-C175-D7)

Camden, S. C. LITTLE DR. Exec: T. L. Little. (M8-C300-D7)

Camden, S. C. WAYSIDE DR., Hwy. 1. Exec: Charles Blyther. (M8-C175-D7)

Charleston, S. C. BONNY DR. Exec: Consolidated Ths. (M8-C400-D7)

Charleston, S. C. FOUR-MILE DR. Exec: L. H. Ayers. (M8-C175-D7)

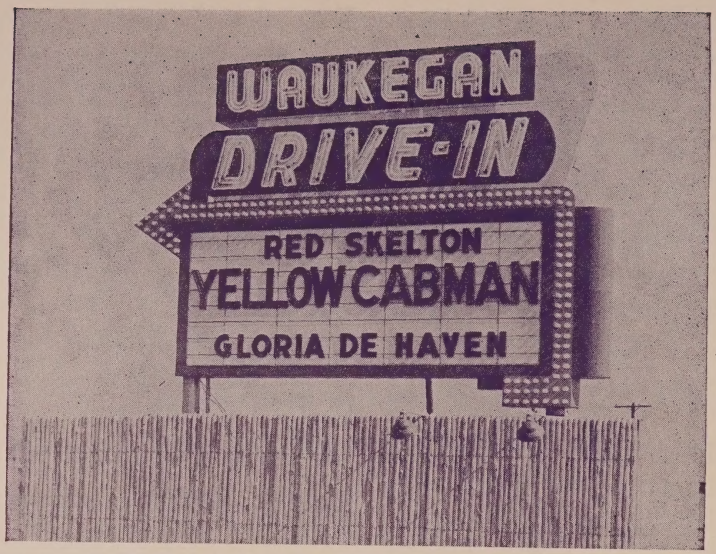
Charleston, S. C. MAGNOLIA DR., Box 223. Exec: Consolidated Ths. (M8-C500-D7)

Cheraw, S. C. CHERAW DR. (CLO.) Exec: R. C. Hatchell. (M8-C200-D7)

Cheraw, S. C. VARIETY DR. Exec: R. S. Rogers, Cheraw Th., Cheraw, S. C. (M8-C200-D7)

Chesnee, S. C. CHESNEE DR. Exec: George Ward. (M8-C200-D7)

Chester, S. C. CHESTER DR., P.O. Box 435. Exec: W. F. Campbell. (M8-C200-D6)



RISING ABOVE THE RUSTIC FENCE at the Waukegan Outdoor Theatre, Waukegan, Ill., is a Wagner attraction panel with 10" and 17" red plastic letters. The panel openings are 13' long with Neo glass.

Chester, S. C. SKYLINE DR. Exec: H. H. Everett, Everett Enterprises, Charlotte, N. C. (M8-C503-D6)

Columbia, S. C. ALTA VISTA DR., Hwy. 1., Rt. 3. Exec: E. G. Dennis. (M8-C200-D7)

Columbia, S. C. NORTH 21 DR., R.F.D. #1. Exec: T. G. Castles. (M8-C250-D7)

Columbia, S. C. SKYWAY ANNEX DR. Exec: W. T. Cameron. (M12-C200-D7)

Columbia, S. C. SKYWAY DR., Box 5191. Exec: E. Truesdale. (M8-C500-D7)

Columbia, S. C. STARLITE DRIVE IN, Rt. 76. Exec: Wilby-Kincey Ct., Charlotte, N. C. (M8-C500-D7)

Conway, S. C. CONWAY DR., Hwy. 503. Exec: H. V. Hewitt, Tabor City, N. C. (M8-C160-D6)

Cowpens, S. C. CHERRY HILL DR. Exec: H. T. Chapman. (M8-C200-D6)

Crescent Beach, S. C. OCEAN BREEZE DR., Hwy. 17. Exec: Walter Morgan. (M8-C300-D7)

Darlington, S. C. DUAL HWY. DR., R.F.D. #4. Exec: S. A. Benson. (M8-C150-D7)

Dillon, S. C. DILLON DR., (CLO.) Hwy. 301. Exec: W. S. Herring. (M8-C250-D6)

Easley, S. C. EASLEY DR. Exec: J. W. Davis. (M8-C375-D7)

Ehrhardt, S. C. DRIVE IN, Hwy. 64. Exec: J. T. Greene, Branchville, S. C. (M8-C150-D6)

Finklea, S. C. FINKLEA DR. Exec: Harry Ludlam. (M8-C150-D7)

Florence, S. C. ACE DR., Hwy. 76. Exec: Ken Benson, Ace Theatre Supply. (M8-C250-D7)

Florence, S. C. CIRCLE DR. Exec: T. S. Roe. (M8-C265-D7)

Gaffney, S. C. GAFFNEY DR. Exec: Campbell and Griffin. (M12-C225-D7)

Gaffney S. C. SKYWAY DR. Exec: Campbell and Griffin. (M12-C250-D7)

Georgetown, S. C. HIGHWAY 17 DR. Exec: M. L. Abrams, Palace Theatre. (M8-C150-D7)

Gloverville, S. C. VALLEY DR. Exec: Curtis Tarlton, F. W. Free. (M8-C300-D7)

Great Falls, S. C. LUCKY STAR DR. Exec: L. E. Edwards. (M8-C200-D6)

Greenville, S. C. OPEN AIR DR., Hwy. 276. Exec: Wilby-Kincey Ct., Charlotte, N. C. (M12-C400-D6)

Greenville, S. C. EASLEY ROAD DR. Exec: S. J. Workman, Woodruff, S. C. (M8-C150-D7)

Greenville, S. C. SKYLAND DR., Buncombe Rd. Exec: Wilby-Kincey Ct., Charlotte, N. C. (M12-C600-D6)

Greenville, S. C. SOUTH 11 DR. Exec: Byron Adams. (M12-C325-D7)

Greenville, S. C. WHITE HORSE DR. Exec: S. J. Workman. (M12-C518-D7)

Greenwood, S. C. AUTO DR., Hwy. 22. Exec: A. T. Livingston, North, S. C. (M8-C250-D7)

Greer, S. C. GREER DR. Exec: H. B. McManus, B. C. Wilson, and Patricia Burns. (M8-C320-D7)

Greer, S. C. KING COTTON DR. Exec: N. E. Belmont. (M8-C250-D7)

Hardeeville, S. C. SOUTH 17 DR. Exec: W. F. Greene. (M12-C158-D7)

Hartsville, S. C. SOUTH 15 DR. Exec: Sam Savitz. (M8-C200-D7)

Hartsville, S. C. STARLITE DR., Box 222, Hwy. 151. Exec: Tony Jones. (M8-C150-D6)

Holly Hill, S. C. DRIVE IN, Hwy. 15. Exec: L. A. Ayers. (M8-C125-D7)

Honea Path, S. C. HONEA-WARE DR. Exec: Martin Street. (M8-C150-D7)

Inman, S. C. MOONLIGHT DR. Exec: George Ward, Colonial Th., Chesnee, S. C. (M8-C150-D6)

Kershaw, S. C. FOSTER'S DR. Exec: W. F. Truesdale. (M8-C250-D6)

Kingstree, S. C. KINGSTREE DR. Exec: Dinkins and Scarbough. (M8-C150-D6)

Lake City, S. C. DRIVE-IN TH. Exec:* (M12-C* -D7)

Lancaster, S. C. MOTOR IN TH., Hwy. 93. Exec: A. J. Biggart. (M8-C150-D6)

Laurens, S. C. DRIVE IN, Hwy. 221. Exec: Jack Davis. (M12-C200-D6)

Marion, S. C. MARION DR., 911 Evans Rd., Hwy. 501. Exec: R. W. Pigg and A. F. Powell, (M8-C175-D6)

Moncks Corner, S. C. BERKELEY DR. Exec: W. F. Friddell. (M8-C200-D7)

Mt. Pleasant, S. C. SEA BREEZE DR. Exec: G. Taylor and E. M. Gunter. (M8-C* -D7)

Mullins, S. C. MULLINS 76 DR. Exec: Howard Anderson. (M12-C300-D6)

Myrtle Beach, S. C. MYRTLE DR. Exec: Anderson Theatre Co., Mullins, S. C. (M8-C400-D7)

Newberry, S. C. NEWBERRY DR., Hwy. 176. P.O. Box 132. Exec: Albert Roof and C. K. Brown. (M8-C200-D6)

Nichols, S. C. DRIVE IN. Exec: George L. Turner, Mullins, S. C. (M8-C150-D6)

North, S. C. DRIVE IN, Box 27. Exec: A. T. Livingston. (M8-C250-D7)

North Charleston, S. C. VICTORY DR. Exec: Mrs. Hiatt. (M8-C600-D7)

North Charleston, S. C. FLAMINGO DR. Exec: Consolidated Ths. (M8-C450-D7)

North Charleston, S. C. NORTH 52 DR. Exec: Consolidated Ths. (M12-C470-D7)

Olanta, S. C. ARD'S DR. Exec: G. Ards. (M8-C100-D7)

Orangeburg, S. C. BON AIR DR., Hwy. 42. Exec: B. L. Watkins, 159 W. Calhoun St. (M8-C400-D7)

Orangeburg, S. C. ORANGEBURG DR., Hwy. 210. Exec: Mrs. Florence Tarlton. (M8-C150-D7)

Orangeburg, S. C. SKYVIEW DR. Exec: E. T. Jones. (M8-C100-D7)

Piedmont, S. C. OAKDALE DR., Hwy. 29, Rt. 2. Exec: Jimmy Gable. (M8-C400-D7)

Rock Hill, S. C. AUTO DR. Exec: Max Reinhardt, Exhibitor's Service, 116 Latta Arcade, Charlotte, N. C. (M8-C296-D7)

Rock Hill, S. C. ROCK HILL DR. Exec: Franklin Frady, 94 Coxe Ave., Asheville, N. C. (M8-C350-D7)

Rock Hill, S. C. FORT ROC DR., Hwy. 21. Exec: Bob Jeffries, P.O. Box 1416, Charlotte, N. C. (M8-C300-D6)

Saint Andrews, S. C. ST. ANDREWS DR. Exec: L. A. Ayers. (M8-C200-D6)

Saint George, S. C. DRIVE-IN TH. Exec: J. T. Greer, Jr. (M8-C150-D7)

Salters Depot, S. C. SALTERS DR., Box 11. Exec: E. T. Leverette. (M8-C150-D7)

Saluda, S. C. SALUDA DR. Exec: J. H. Ridgell. (M8-C150-D7)

Scranton, S. C. DRIVE-IN TH. Exec: Harry Wayne. (M8-C100-D7)

Seneca, S. C. SENECA DR., (CLO.) Hwy. 28. Exec: Morris Land. (M8-C175-D6)

Spartanburg, S. C. SPARTANBURG DR., Box 1222. Exec: B. C. Williams. (M8-C350-D6)

Spartanburg, S. C. STARLITE DR., Rt. 7. Exec: Marvin Pless. (M8-C250-D6)

Summerville, S. C. DRIVE IN, Hwy. 64. Exec: L. H. Ayers. (M8-C200-D7)

Sumter, S. C. SUMTER DR., P. O. Box 941, Hwy. 521. Exec: John J. Motley, Jr. (M8-C150-D7)

Sumter, S. C. SUNSET DR., Box 375. Exec: J. A. Morrissey. (M12-C200-D7)

Taylors, S. C. BELMONT DR. Exec: N. E. Belmont. (M8-C150-D7)

Union, S. C. DRIVE IN, Hwy. 92. Exec: Everett Enterprises. (M8-C225-D6)

Walhalla, S. C. MOUNTAIN VIEW DR. (CLO.) Exec: Paul Pless. (M7-C250-D6)

Walterboro, S. C. DRIVE IN, Hwy. 17. Exec: E. B. Funderburk. (M12-C280-D7)

Ware Shoals, S. C. HONEA WARE DR. Exec: Everett Olsen, 2508 Belvedere Ave., Charlotte, N. C. (M8-C175-D7)

West Columbia, S. C. HALL'S DR. Exec: Harold Hall. (M8-C300-D7)

Winnsboro, S. C. WINNRIDGE DR. Exec: W. Brown. (M8-C200-D7)

York, S. C. YORK-CLOVER DR. Exec: Pinson and Louder. (M8-C-200-D7)

CHICAGO TERRITORY

Illinois

Aurora, Ill. AURORA DR., Rt. 31, Exposition Park. Exec: Orville Fox and J. La Plante. (M7-C300-D7)

Aurora, Ill. HI-LITE 30 DR., Rt. 30, Joliet Rd. Exec: A. Howaniec and Dr. Kruzowski. (M7-C650-D7)

Bartlett, Ill. STARVIEW DR. Exec: Starview Dr. Th. Corp. (M7-C600-D7)

Bloomington, Ill. PHIL KRON DR. Exec: Phil Kron Th. Corp. (M5-C800-D7)

Blue Island, Ill. ABC DR., 147th and Western. Exec:* (M7-C700-D7)

Champaign, Ill. ILLINI DR. Exec: Frank Stewart, Family Amusement Co. (M7-C450-D7)

Champaign, Ill. TWIN CITY DR., N. Market St., Rd. C. Exec: J. W. Barr. (M7-C900-D7)

Chicago, Ill. DOUBLE DR., Near 76th and Mozart. Exec: M and R Amusement Co. (M7-C1800-D7)

Chicago, Ill. HARLEM AVE. DR., 4101 N. Harlem Ave. Exec: Essaness Theatres Ct. (M7-C1100-D7)

Chicago, Ill. STARLIGHT DR., 95th and Ridgeland. Exec: James Kilgallen. (M7-C1150-D7)

Clinton, Ill. CLINTON OUTDOOR TH. Exec: Frank Stewart, Family Amuse. Co. (M7-C400-D7)

Danville, Ill. DIXIE DR., Dixie Hwy. N., Box 426. Exec: O'Keefe Amuse. Co. (M7-C725-D7)

Danville, Ill. MELODY LANE DR. Exec: A. Alpers. (M7-C150-D7)

Danville, Ill. SKY WAY DR., Georgetown Rd. Exec: Jack Butler. (M7-C750-D7)

Decatur, Ill. DECATUR DR., 2500 N. Jasper St. Exec: George Kerasotes, Springfield, Ill. (M6-C953-D7)

Decatur, Ill. OUTDOOR DR. Exec: Geo. Kerasotes. (M7-C650-D7)

Dekalb, Ill. DE-VAL DR., Hwy. 53. Exec: Valos Ct. (M7-C500-D7)

Dixon, Ill. MIDWAY DR. Exec: A. J. Contas, L. G. Roser, Praireville Th. Co. (M7-C700-D7)

Dunlap, Ill. MIDWAY DR. Exec: Midway Dr. Th. Corp. (M8-C600-D7)

Elmhurst, Ill. SKY-HI DR., Roosevelt and Butterfield Rds. Exec: Louis Jelinek. (M6-C500-D7)

Freeport, Ill. COMET DR. Exec: Steve Bennis. (M8-C400-D7)

Galesburg, Ill. GALESBURG DR. Exec: Christissen and Tracy. (M7-C600-D7)

Grayslake, Ill. FAMILY OUTDOOR TH., Rts. 83 and 120. Exec: Held and Nelson. (M7-C1040-D7)

Hoopeston, Ill. SKYWAY DR. Exec: Jack Butler. (M7-C450-D7)

Joliet, Ill. BEL-AIR DR. Exec: T. I. Wagner, 1217 Taylor St. (M7-C1000-D7)

Joliet, Ill. HILLTOP DR., 1800 Maple Rd. Exec: H. and E. Balaban. (M7-C500-D7)

Kankakee, Ill. 54 DR., Rt. 54, Fair and Greenwood Sts. Exec: United Theatres. (M7-C500-D7)

La Grange, Ill. HARVEY DR. Exec: Albert Warnik. (M8-C* -D7)

La Grange, Ill. SIXTY-SIX DR., Rt. 45, Joliet and La Grange Rds., Box 257. Exec: Phil Smith Ct., Boston, Mass. (M6-C1000-D7)

La Salle, Ill. LA SALLE OUTDOOR, Rt. 6. Exec: Alliance Theatres Ct., Chicago 4. (M7-C475-D7)

Lincoln, Ill. BENNIS AUTOVUE. Exec: Steve Bennis. (M7-C500-D7)

Lincoln, Ill. LINCOLN DR. Exec: W. H. McKee. (M7-C600-D7)

Macomb, Ill. FORT DR. Exec: Earl Williams and W. W. Allen (M7-C425-D7)

Morris, Ill. CIRCLE A DR. Exec: Anderson Theatres Ct. (M7-C500-D7)

Morton Grove, Ill. MORTON GROVE DR., 9500 N. Waukegan Rd. Exec: N. S. Barger, Barger and Hunt. (M6-C1000-D7)

Newport Twnshp., Ill. HI-WAY DR. Exec: Hiway Amuse. Ent. (M8-C500-D7)

Norris, Ill. HILLCREST DR. Exec: Norris Theatre Co. (M7-C500-D7)

Oaklawn, Ill. TWIN OPEN AIR TH., 87th and Cicero. Exec: N. S. Barger, Barger and Hunt. (M8-C1700-D7)

Oregon, Ill. PINES DR. Exec: Russel and James Lamb. (M8-C300-D7)

Ottawa, Ill. DRIVE IN. Exec: Alliance Theatres Ct., Chicago 4. (M7-C475-D7)

Pekin, Ill. PEKIN DR. Exec: E. V. Youngblood, W. H. McKee, Al Byrd. (M7-C500-D7)

Pekin, Ill. PEKIN STARLITE DR. Exec: Kerasotes Theatres (M7-C700-D7)

Peoria, Ill. BELLEVUE DR., 210 Seventh St., Rt. 116. Exec: Abner Klein. (M7-C700-D7)

Peoria, Ill. PEORIA DR., W. Glen Ave. Exec: Ralph Lawler. (M6-C800-D7)

Pontiac, Ill. PONTIAC DR. Exec: J. E. Lally. (M7-C275-D7)

Riverdale, Ill. FOUR SCREEN DR., 745 W. 138th. Exec: Essaness Th. Ct. (M8-C1200-D7)

River Grove, Ill. NORTH AVENUE DR., 1901 River Rd. nr. North Ave. Exec: Essaness Theatres Ct. (M8-C1000-D7)

Rockford, Ill. RIVERLANE OUTDOOR TH., Rt. 173, P.O. Box 866. Exec: M. Schweitzer. (M7-C690-D7)

Rockford, Ill. ROBIN DR. Exec: H. and E. Balaban. (M7-C800-D7)

Streator, Ill. STREATOR DR. Exec: Frank Stewart, Family Amusement Co. (M7-C300-D7)

Urbana, Ill. FAMILY DR. Exec: Family Amusement Co. (M8-C650-D7)

Waukegan, Ill. DRIVE IN. Exec: Highway Amusement Enterprises, Inc. (M8-C628-D7)

Waukegan, Ill. OUTDOOR TH., Rt. 41 and Washington St. Eexc: F. Ryan. (M7-C750-D7)

Indiana

Bass Lake, Ind. MELODY DR. Exec: Melody Th. Co. (M7-C300-D7)

Griffith, Ind. GRIFFITH DR., Ridge Rd. and Cline Ave. Exec: Phil Smith Ct., Boston, Mass. (M6-C650-D7)

Hammond, Ind. HAMMOND 41 OUTDOOR, Rt. 41. Exec: Manta and Rose Ct. (M7-C1000-D7)

Hammond, Ind. MOON LITE DR., 5th and Cline Sts. Exec: Peter McKeone and Jos. Finerty. (M7-C1000-D7)

La Porte, Ind. COMET DR. Exec: Keith McDaniel and Forest Zimmerman. (M7-C400-D7)

La Porte, Ind. DELUXE AIRDROME DR. Exec: Joe Million and Assoc. (M7-C600-D7)

Michigan City, Ind. 212 OUTDOOR, Rts. 12 and 20. Exec: Manta and Rose Ct. (M7-C600-D7)

Osceola, Ind. STARLITE DR., Rt. 20. Exec: Louis Cochovety. (M6-C800-D7)

South Bend, Ind. SOUTH BEND AUTO TH., Rt. 2, 4903 W. Western Ave. Exec: A. Ochs. (M6-C850-D7)

CINCINNATI TERRITORY

Indiana

Vevay, Ind. ALPS DR. Exec: Charles Scott. (M8-C550-D7)

Kentucky

Carrollton, Ky. RIVERVIEW DR., P. O. Box 179. Exec: R. L. Gaines. (M8-C600-D7)

Cliff, Ky. PRESTONSBURG DR. Exec: D. Stewart, Prestonburg, Ky. (M8-C320-D7)

Covington, Ky. DIXIE GARDENS DR., Dixie Hwy. Exec: Willis Vance. (M8-C700-D7)

Danville, Ky. STARLITE DR. Exec: Joe Marshall. (M8-C450-D7)

Dayton, Ky. RIVERVIEW DR. Exec: R. Bressler. (M8-C400-D7)

Florence, Ky. FLORENCE DR. Exec: George Hill. (M8-C625-D7)

Frankfort, Ky. STARWAY DR. Exec: Sledge, Theatre Owners Corp., Cincinnati. (M8-C400-D7)

Georgetown, Ky. BLUE GRASS DR., Rt. 25. Exec: Mark Cummins. (M8-C400-D7)

Goody, Ky. DRIVE-IN TH. Exec: L. Shor. (M8-C400-D7)

Harlan, Ky. WAYNE DR. Exec: Dr. B. F. Wright, James and Hugh Martin. (M8-C600-D7)

Hazard, Ky. GRAND-VUE DR., Box 705. Exec: Eugene H. Combs and Richard M. Johnson. (M7-C300-D7)

Jackson, Ky. MED-O-VUE DR. Exec: John Robinson and William Northrup. (M8-C300-D7)

Middlesboro, Ky. REDA DR. Exec: Don Reda. (M8-C450-D7)

Nicholasville, Ky. LEXINGTON DR., R.R. 1. Exec: Johnson Enterprises. (M7-C500-D7)

Pikeville, Ky. DRIVE IN. Exec: Childers and Powell. (M8-C485-D7)

Princeton, Ky. SKYWAY DR. Exec: Vernon Waible, 2625 N. Kentucky Ave., Evansville, Ind. (M8-C300-D7)

Richmond, Ky. LAKE CARLISLE DR. Exec: Arthur C. Craig. (M8-C400-D7)

Whitesburg, Ky. ELINDA ANN DR. Exec: Art V. Phillips. (M8-C300-D7)

Winchester, Ky. SKYVIEW DR., 156 N. Upper. Exec: Raymond Toepfer. (M7-C450-D7)

Ohio

Aberdeen, O. RIVERSIDE DR. Exec: A. Edw. Campbell. (M8-C400-D7)

Allenburg, O. ROSELAWN AUTO TH. Exec: J. Henry Davidson, Associated Theatres Ct., Lynchburg, O. (M8-C400-D7)

Athens, O. VALLEY DR. Exec: R. Shor. (M7-C400-D7)

Belpre, O. BELPRE OPEN AIR TH., P.O. Box 241. Exec: Fred Helwig and Fred Clemens. (M8-750-D7)

Burlington, O. AUTO DR. Exec: F. Allara. (M8-C400-D7)

Cambridge, O. CAMBRIDGE CRUISE IN. Exec: F. Francis, Jr. (M8-C350-D7)

Celina, O. ST. MARY'S DR. Exec: Chakeres Ct., Springfield, O. (M8-C500-D7)

Chillicothe, O. DEL-AIR DR. Exec: Fred N. Robertson. (M8-C400-D7)

Chillicothe, O. MOONLIGHT AUTO TH., E. Main St. Exec: B. Cook and E. Payne. (M8-C460-D7)

Cincinnati, 5, O. AUTO-IN, 500 Rosemont Ave. Exec: Jerome J. Kunz. (M8-C400-D7)

Cincinnati, O. TWIN DR., Reading Rd. and Tennessee. Exec: Rube Shor. (M8-C1700-D7)

Circleville, O. STARLITE CRUISE IN. Exec: H. E. Bennett. (M8-C300-D7)

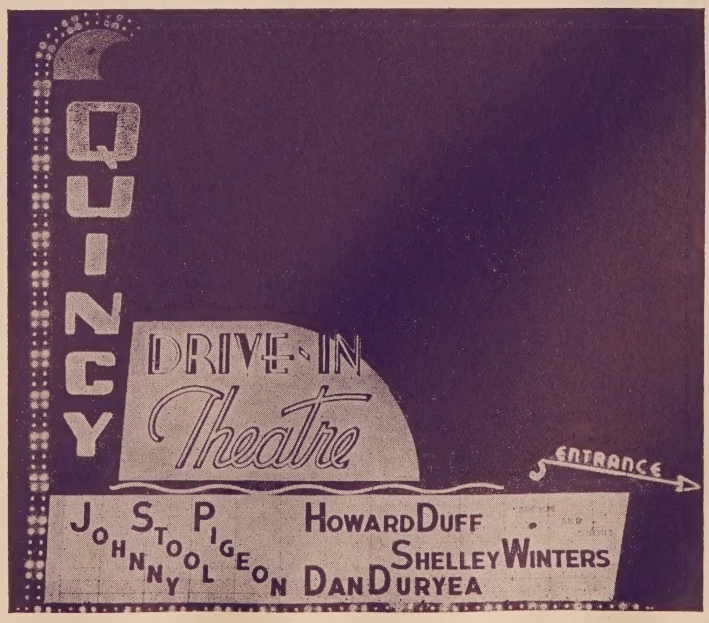
Coalton, O. TOWN AND COUNTRY DR., Rt. 75. Exec: Frank Nolan. (M8-C300-D7)

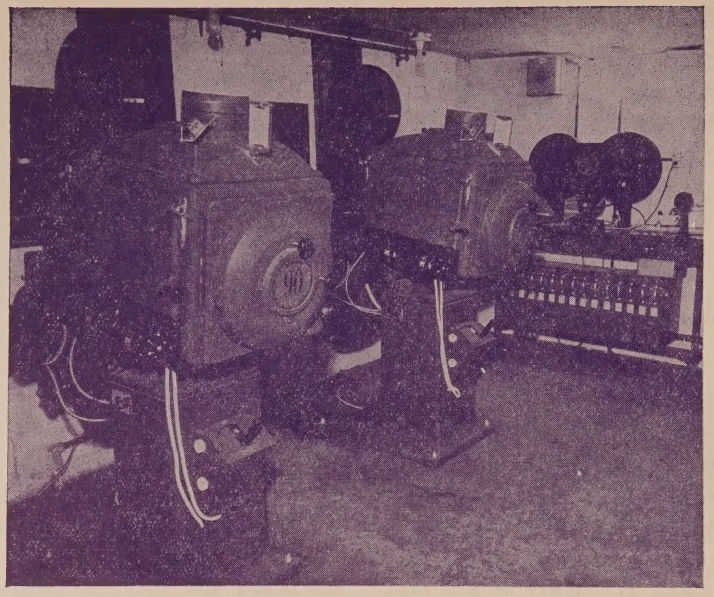
Columbus, O. LINDEN AIR DR. Exec: W. Queen. (M8-C450-D7)

Columbus, O. CCC AUTO TH., 1395 Harrisburg Pike. Exec: F. Yassenoff and Harold Schwartz. (M7-C400-D7)

Columbus, O. EASTSIDE AUTO TH., 3811 E. Main St. Exec: F. Yassenoff and H. Schwartz. (M7-C400-D7)

AWARDED AN HONORABLE MENTION in the 1950 Wagner Sign Photo Contest, the Quincy Drive-In, West Quincy, Ill., has an outstanding and appealing sign board at the entrance to the parking area.





BOTH CLEAR AND BRIGHT LIGHT is provided on the screen of the Valley Drive-In, Elkview, W. Va., by Strong Mighty "90" projection arc lamps. The installation was made by Charleston Theatre Supply.

Columbus, O. MILES EAST MAIN DR., 5000 E. Main St. Exec: Mrs. Ethel Miles. (M8-C700-D7)

Columbus, O. MILES SCIOTO DR., 3050 Riverside Dr. Exec: Mrs. Ethel Miles. (M7-C500-D7)

Columbus, O. MILES WEST BROAD DR., 4050 Broad St. Exec: Mrs. Ethel Miles. (M7-C500-D7)

Columbus, O. NATIONAL AUTO TH., 3750 W. Broad. Exec: F. Yassenoff. (M8-C550-D7)

Columbus, O. SOUTH DR. Exec: M. Yassenoff. (M8-C700-D7)

Dayton, O. BELMONT AUTO IN TH., P.O. RR 2. Exec: Max Milbauer. (M8-C500-D7)

Dayton, O. DAYTON DR., 2700 Valley Pike. Exec: W. Bressler. (M8-C500-D7)

Dayton, O. MIAMI CRUISE IN, 6500 W. 3rd St. Exec: Ben Wachnansy. (M8-C500-D7)

Dayton, O. SALEM DR., 3815 Salem Ave. Exec: Robert Gump and Paul Swinger. (M8-C400-D7)

Dayton, O. SHERWOOD DR., 5405 W. 3rd St. Exec: Sam and Allen Levin. (M8-C500-D7)

Dayton, O. SKYLINE AUTO, Rt. 25, P. O. Box 867. Exec: W. C. Walters. (M8-C650-D7)

Dayton, O. SUNSET DR., Germantown Pike. Exec: J. Hulakan. (M8-C350-D7)

Dent, O. DENT AUTO DR., Harrison Ave. Exec: Jerome J. Kunz. (M7-C300-D7)

Dublin, O. RIVERSIDE AUTO TH. Exec: F. Yassenoff and Harold Schwartz. (M7-C400-D7)

Eaton, O. CRUISE-IN TH. Exec: L. Clemmer. (M8-C400-D7)

Excello, O. DIXIE DR. Exec: R. Shor. (M7-C500-D7)

Fairborn, O. SKYBORN DR. Exec: J. Clemmer. (M8-C500-D7)

Forestville, O. FOREST AUTO TH., 7940 Beechmont. Exec: Marcus Enterprises Ct., Indianapolis Ind. (M7-C600-D7)

Gallipolis, O. KANAUGA DR. Exec: Harry Wheeler. (M8-C400-D7)

Greenville, O. SPEEDWAY AUTO TH. Exec: L. Shor. (M8-C500-D7)

Hamilton, O. ROMONA DR. Exec: Geo. Turlukis. (M8-C500-D7)

Hamilton, O. HAMILTON AUTO TH., Old Oxford Rd. Exec: L. E. Olt. (M7-C400-D7)

Jackson, O. GROVE AUTO DR. Exec: Henry Stagmiller. (M8-C250-D7)

Lancaster, O. SKYVIEW CRUISE IN, East Main Pike. Exec: Carlos Crumm and E. Pulliam. (M8-C400-D7)

Lebanon, O. OLD FORT AUTO TH. Exec: J. Henry Davidson, Associated Theatres Ct., Lynchburg, O. (M7-C314-D7)

Lucasville, O. SCIOTO BREEZE AUTO TH. Exec: R. O. Lewis. (M8-C350-D7)

Marietta, O. STARLITE DR. Exec: J. B. Stradman. (M8-C350-D7)

Miamisburg, O. MIAMI CRUISE IN, S. Dixie Hwy. Exec: L. Clemmer. (M7-C400-D7)

Milford, O. MO-TOUR DR., Chillicothe Pike. Exec: J. C. Baldwin. (M8-C600-D7)

Montgomery, O. DRIVE IN, Montgomery Rd. Exec: Phil Smith Ct., Boston, Mass. (M8-C684-D7)

Mount Healthy (Cincinnati), O. MOUNT HEALTHY DR., 900 Compton. Exec: L. Wetzel. (M8-C575-D7)

Mount Holly, O. STARLITE DR. Exec: Jerome Jackson, Happy Hour Theatre, Williamsburg. (M8-C350-D7)

Newark, O. VALLEY DR., P.O. Box 592. Exec: Floyd Price. (M8-C500-D7)

Piqua, O. PIQUA DR., R.R. 3, P.O. Box 58A. Exec: Paul Swinger and R. Gump. (M8-C450-D7)

Saint Henry, O. STARLITE AUTO DR. Exec: Feltz Bros. (M8-C350-D7)

Sidney, O. SIDNEY DR. Exec: Howard Gall. (M8-C350-D7)

Six Mile Turn (Zanesville, P.O.), O. STARLET DR. Exec: Dorman Law. (M7-C300-D7)

South Zanesville, O. SKYWAY DR., R.D. No. 1. Exec: Roy Waller. (M8-C450-D7)

Springfield, O. STAR DUST DR. Exec: Sam Levin. (M6-C400-D7)

Springfield, O. MELODY CRUISE-IN TH. Exec: Ray Stout. (M8-C400-D7)

Springfield, O. SKYHIGH DR. Exec: Sam Lenin. (M8-C500-D7)

Stockton (Hamilton, P.O.), O. ACME AUTO TH., Hamilton-Carthage Rd. Exec: Mark Cummins. (M8-C400-D7)

Troy, O. DIXIE TROY DR. Exec: Moe and Elizabeth Potasky. (M8-C375-D7)

Urbana, O. URBANA AUTO TH. Exec: Guy Spangler. (M8-C400-D7)

Wapakoneta, O. MIDWAY DR. Exec: Howard Gall. (M8-C200-D7)

Washington Court House, O. CCC AUTO TH. Exec: J. Henry Davidson, Associated Theatres Ct., Lynchburg, Ohio. (M8-C400-D7)

West Milton, O. MILLERS GROVE DR., R.F.D. No. 6. Exec: Miller Bros. (M7-C350-D7)

Wheelersburg, O. SCIOTO DR. Exec: Herb Ochs. (M7-C500-D7)

Wilmington, O. DRIVE IN. Exec: Chakeres Ct., Springfield, O. (M6-C500-D7)

Woodlawn, O. WOODLAWN DR., Springfield Pike. Exec: Nat Kaplan. (M8-C550-D7)

Xenia, O. SUNDOWN CRUISE-IN. Exec: Sundown Cruise-In, Inc. (M8-C500-D7)

Xenia, O. XENIA AUTO INN. Exec: Dean Dennis. (M8-C400-D7)

Zanesville, O. MAPLE AUTO DR., 2800 Maple Ave. Exec: Erma Boedcher. (M7-C380-D7)

Zanesville, O. OLD TRAIL DR. Exec: C. E. Huprich. (M7-C160-D7)

West Virginia

Beckley, W. Va. BECKLEY OPEN AIR TH. Exec: F. Clemens. (M8-C450-D7)

Beckley, W. Va. CRAB ORCHARD DR., P.O. RFD Harvey, W. Va. Exec: E. R. Harvey. (M7-C500-D7)

Belle, W. Va. TRAIL DR. Exec: R. Shor. (M8-C500-D7)

Bluefield, W. Va. SKYWAY DR. Exec: S. Switow. (M8-C600-D7)

Branchland, W. Va. DRIVE-IN TH. Exec:* (M8-C* -D7)

Ceredo, W. Va. CEREDO DR. Exec: Abe Hyman. (M7-C500-D7)

Craigsville, W. Va. CRAIGSVILLE DR. Exec: Arden A. Richards. (M8-C100-D7)

Elkview, W. Va. DRIVE-IN TH. Exec: Ray Philan. (M8-C300-D7)

Glen Jean, W. Va. MOUNTAIN AIR DR. Exec: E. J. Buffa. (M8-C350-D7)

Hamlin, W. Va. NEW DR. Exec: Mrs. Dave Brown. (M8-C* -D7)

Hinton, W. Va. GREENBRIER DR. Exec:* (M8-C350-D7)

Hugheston, W. Va. ARENA DR. Exec: John Thabit. (M8-C300-D7)

Lewisburg, W. Va. WALNUT HILL DR., Rt. 219. Exec: D. Wenkley. (M7-C400-D7)

Logan, W. Va. MONITOR DR. Exec: F. Clemens. (M8-C350-D7)

Madison, W. Va. MADISON DR. Exec: W. B. Rose. (M8-C300-D7)

Man, W. Va. MAN DR. Exec: A. W. Cook. (M8-C430-D7)

Mason City, W. Va. MASON CITY DR. Exec: Ross Filson. (M7-C500-D7)

Mount Hope, W. Va. MOUNTAINAIR DR. Exec: E. J. Buffa. (M8-C350-D7)

Parkersburg, W. Va. MUR DR., 3930 Murdoch Ave. Exec: Lilly Schneider. (M7-C316-D7)

Princeton, W. Va. DRIVE IN. Exec. A. R. Belcher. (M8-C275-D7)

Rupert, W. Va. SUNSET DR. Exec: R. A. Callison. (M7-C290-D7)

Saint Albans, W. Va. VALLEY DR., Winfield Rd. Exec: R. Shor. (M7-C500-D7)

Welch, W. Va. STARLITE DR. Exec: A. W. Cook, Jr. (M8-C500-D7)

CLEVELAND TERRITORY

Ohio

Akron, O. AUTO VOICE DR. Exec: Ohio Theatre Serv. (M7-C76-D7)

Akron, O. STARLIGHT DR., 1585 S. Arlington, Hwy. 224. Exec: George A. Blake. (M6-C350-D7)

Alliance, O. PARK DR., Hwy. 62. Exec: S. Barck. (M6-C430-D7)

Andover, O. SHANE'S DR., Hwy. 7. Exec: V. McCrone, Ashtabula, O. (M8-C350-D7)

Arlington, O. AMANDA AUTO TH., Hwy. 37. Exec: R. Dyer, P.O. R.R. #1, Box 74B. (M8-C250-D7)

Ashtabula, O. ASHTABULA SKYWAY DR., Hwy. 20. Exec: Ohio Theatre Service. (M7-C300-D7)

Barberton, O. MAGIC CITY DR. Exec: Ohio Theatre Service. (M7-C400-D7)

Barberton, O. VALLEY AUTO TH., Hwy. 21. Exec: Vincent Lauter. (M6-C200-D7)

Bellfontaine, O. BELLFONTAINE DR., Hwy. 68. Exec: Dale Elleman. (M8-C300-D7)

Blaine, O. SUPER 40 DR., Hwy. 40. Exec: C. G. Velas. (M8-C400-D7)

Bucyrus, O. TRI CITY DR., Hwys. 30 and 598, P.O. Box 504. Exec: D. P. Jacobs. (M8-C375-D7)

Cadiz, O. DRIVE-IN TH. Exec: T. Wilson and R. Comoher. (M8-C300-D7)

Chardon, O. HAZLEWOOD DR. Exec: Ohio Theatre Serv. (M8-C275-D7)

Cleveland, O. CLEVELAND AUTO DR., 11211 Brookpark Rd. Exec: Sam Haas. (M6-C700-D7)

Cleveland, 2, O. CLOVERLEAF DR., 3600 Ridge Rd. Exec: Lombardi Bros. (M7-C1200-D7)

Cleveland, O. EAST SIDE DR., Hwy. 8, Northfield Rd. Exec: Phil Smith Ct., Boston, Mass. (M8-C600-D7)

Cleveland, O. WEST SIDE DR., Hwy. 17, Riverside Drive. Exec: Phil Smith Ct., Boston, Mass. (M8-C600-D7)

Copley, O. MONTROSE DR., Medina-Akron Rd. Exec: Lawrence Tyrell, 185 Avondale Dr., Akron. (M8-C500-D7)

Coshocton, O. SKYWAY DR. Exec: F. Gilfilen. (M7-C225-D7)

Creston, O. CRESTON AUTO TH., Hwy. 3. Exec: M. R. Martin, 950 Delia Ave., Akron, O. (M6-C200-D7)

Cuyahoga Falls, O. ASCOT DR., Hwy. 8. Exec: Clarence Snook and George A. Blake. (M6-C400-D7)

Defiance, O. DEFIANCE DR., Hwy. 66, P.O. R.R. 2. Exec: William Logan. (M6-C200-D7)

Delaware, O. KINGMAN DR., Hwy. 23, P.O. 111. Exec: George Kaler. (M6-C275-D7)

Delphos, O. STAUP AUTO TH., Hwy. 30. Exec: Carl H. Schwyn Ths. (M6-C300-D7)

East Liverpool, O. SKY VIEW DR., Hwy. 170. Exec: Lawrence Black. (M6-C250-D7)

East Liverpool, O. SUPER 30 DR. Exec: A. G. Constant. (M6-C600-D7)

East Palestine, O. MIDWAY DR. Exec: Jack Cohen. (M7-C500-D7)

Elyria, O. CARLISLE DR., Hwy. 20. Exec: John Tender. (M8-C400-D7)

Elyria, O. TOWER DR. Exec: Interlake Th. Corp. (M8-C500-D7)

Fairview, O. FAIRVIEW DR., Center Ridge and W. 210th. Exec: Horace Abrams. (M6-C700-D7)

Findlay, O. FINDLAY DR., 1315 S. West St. Exec: J. Knight, 509 E. Main St., Columbus. (M8-C325-D7)

Fostoria, O. STARLITE DR., Route 23 So. Exec: Virgil Pfau. (M6-C400-D7)

Fremont, O. FREMONT DR., 219½ So. Front St. Exec: Mosser Bros. (M7-C500-D7)

Goshen Township (New Philadelphia, P.O.), O. TWILIGHT DR., Hwy. 250. Exec: A. K. Veach. (M6-C225-D7)

Harrisburg, O. MID CITY DR., Hwy. 62. Exec: Jerry Reinhart. (M6-C635-D7)

Kenton, O. HI ROAD DR., Hwy. 68. Exec: Bob Hipp. (M8-C325-D7)

Lima, O. GLORIA DR., Hwy. 25. Exec: H. Shock. (M6-C300-D7)

Lima, O. LIMA DR., Hwy. 25. Exec: H. Shock. (M6-C300-D7)

Lima, O. SHARON DR. Exec: Horace Shock. (M6-C450-D7)

Lima, O. SPRINGBROOK DR. Exec: Carl H. Schwyn Ths. (M6-C700-D7)

Lorain, O. LORAIN DR., Hwy. 2. Exec: Wilbur and A. E. Ptak. (M6-C350-D7)

Lowellville, O. SKY-HI DR., R.D. No. 1. Exec: Foster Hathaway. (M6-C450-D7)

Madison, O. SKYWAY DR., Hwy. 20. Exec: Associated Ths., Cleveland, O. (M6-C300-D7)

Mansfield, O. MANSFIELD GALION DR., Hwy. 42. Exec: Harold Nussbaum. (M6-C500-D7)

Mansfield, O. MIDWAY AUTO, Hwy. 42. Exec: Al Ochs. (M6-C350-D7)

Mansfield, O. SPRING HILL DR. Exec: M. Mosser. (M6-C300-D7)

Marion, O. MARION DR., Hwy. 23. Exec: Horace Abrams. (M6-C300-D7)

Marion, O. SOUTH DR. Exec: Cooperative Ths. (M6-C250-D7)

Massillon, O. STARK DR., 2416 Lincolnway E. Exec: Skirball Bros. Ct., Cleveland. (M6-C600-D7)

Maumee, O. MAUMEE DR., Hwy. 20. Exec: Paul Wintner. (M6-C800-D7)

Mentor, O. MENTOR DR., Hwy. 20. Exec: Shulman and Schwartz. (M6-C400-D7)

Millbury, O. WOODVILLE DR., Hwy. 120. Exec: F. F. Pavlica. (M8-C350-D7)

Morristown, O. MORRISTOWN DR., Hwy. 40. Exec: H. Mendelson, Cadiz Dept. Store, Cadiz, O. (M8-C325-D7)

Mt. Vernon, O. KNOX AUTO TH., Hwy. 13. Exec: R. Sturgis. (M6-C300-D7)

Newcomerstown, O. STAR LITE DR., Hwy. 36. Exec: Manos Amusement, Toronto, O. (M8-C300-D7)

Niles, O. LA VERNE DR., Hwy. 422. Exec: C. D. Clark, 172 Atlantic N.E., Warren, O. (M6-C250-D7)

Northfield, O. NORTHFIELD DR. Exec: Edw. Buczynski. (M6-C400-D7)

North Kingsville, O. MIDWAY AUTO TH. Exec: Foster Hathaway, Ritz Th., Struthers, O. (M7-C300-D7)

Norwalk, O. SKY VIEW DR., Hwy. 20. Exec: Lou Ratener and Tony Stern, 500 Film Bldg., Cleveland, O. (M8-C425-D7)

Painesville, O. BELVEDERE DR. Exec: Fred Falcons. (M8-C300-D7)

Portage, O. SKY LITE DR., Hwy. 25. Exec: Carl H. Schwyn. (M7-C500-D7)

Port Clinton, O. OTTAWA DR. Exec: Al Ochs. (M8-C300-D7)

Ravenna, O. MIDCITY DR. Exec: Ohio Theatre Serv. (M8-C400-D7)

Rayland, O. DRIVE IN, Hwy. 7. Exec: Herb Ochs. (M6-C600-D7)

Rittman, O. SUNSET AUTO TH. Exec: R. B. Sauer. (M6-C250-D7)

Russell's Point, O. EAST LAKE DR. Exec: Jack Gutilla, P. O. Box 507, Indian Lake, O. (M6-C500-D7)

St. Clairsville, O. SHIA'S DR., Hwy. 40. Exec: S. D. Shia. (M8-C400-D7)

Salem, O. DRIVE IN. Exec: Vogel Bros. (M8-C600-D7)

Sandusky, O. SANDUSKY DR., Hwy. 2. Exec: Earl Seitz. (M7-C500-D7)

Sawyerwood, O. GALA DR., Hwy. 224. Exec: Jas. Ramicone, P. O. Box 239, East Akron, O. (M8-C500-D7)

Steubenville, O. FAMILY DR., Toronto Rd., Hwy. 7. Exec: P. Wellman, Girard, O. (M6-C450-D7)

Steubenville, O. SUNSET AUTO TH., Sunset Blvd. Ext. Exec: John Selby and R. Noltomeyer. (M6-C500-D7)

Strasburg, O. BOYERS AUTO TH., Hwy. 250. Exec: Roy McCombe and W. B. Franklin. (M6-C400-D7)

Tiffin, O. TIFFIN DR., Hwy. 53, R.R. #3. Exec: Howard Shults. (M8-C275-D7)

Toledo, O. PARKSIDE DR., Hwy. 2. Exec: J. Dempsey. (M8-C800-D7)

Toledo, O. TELEGRAPH DR., Hwy. 24, Telegraph and Alexis Rds. Exec: J. Dempsey. (M6-C400-D7)

Toledo, O. TOLEDO DR., Hwy. 223, R.R. #8. Exec: B. Wachnansy. (M6-C700-D7)

Uniontown, O. BLUEBIRD AUTO TH., Hwy. 8. Exec: E. Ballou. (M6-C250-D2)

Van Wert, O. LINCOLN DR. Exec; E. W. Burgett. (M8-C560-D7)

Wadsworth, O. BLUE SKY DR., Hwy. 224. Exec: John Selby. (M6-C200-D7)

Warren, O. ELM ROAD DR. Exec: Mary Hreno. (M8-C200-D7)

Warren, O. SKYWAY DR. Exec: Ohio Theatre Serv. (M8-C300-D7)

Warren, O. SUPER 45 DR. Exec: C. Ryder, D. Del Bene and G. Snyder. (M7-C* -D7)

Wickliffe, O. EUCLID AVE. OUTDOOR TH., 28737 Euclid Ave. Exec: Horace Abrams. (M8-C700-D7)

Wooster, O. SKYLINE AUTO TH., Hwy. 30. Exec: George Davis. (M6-C300-D7)

Youngstown, O. NORTHSIDE DR., Hwy. 90. Exec: Associated Ths., Cleveland, O. (M6-C500-D7)

Youngstown, O. SOUTHSIDE DR., 15 Illinois Ave., Hwy. 7. Exec: Associated Ths., Cleveland, O. (M6-C500-D7)

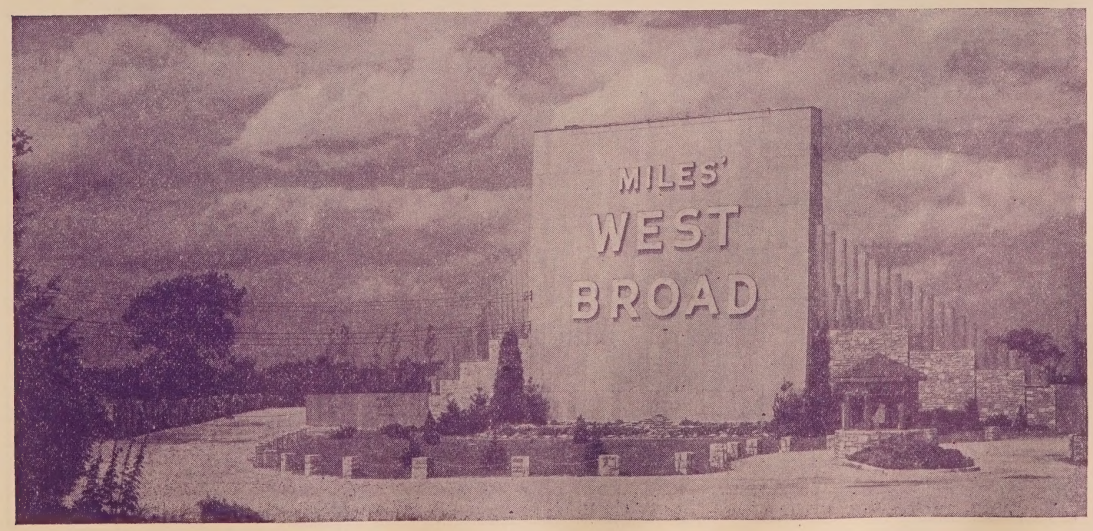
Youngstown, O. WESTSIDE DR., Hwy. 18. Exec: Associated Ths., Cleveland, O. (M6-C450-D7)

DALLAS TERRITORY

New Mexico

Albuquerque, N. M. CACTUS DR., Yale Ave. nr. Hwy. 66. Exec: Interstate Th. Ct., Dallas, Tex. (M10-C674-D7)

ALUMINUM in corrugated sheet form furnishes an attractive and durable front for the screen tower of Miles' West Broad Drive-In, Columbus, O.



Albuquerque, N. M. '66 DR., 4800 W. Central Ave. Exec: Interstate Th. Ct., Dallas, Tex. (M10-C400-D7)

Albuquerque, N. M. STAR DR., 5400 N. 2nd. Exec: T. E. Ribble. (M10-C500-D7)

Albuquerque, N. M. TESEQUE DR., 500 N. Penna. Ave. Exec: Cliff Butler. (M10-C320-D7)

Albuquerque, N. M. YUCCA DR. Exec: Chas. Brent. (M10-C600-D7)

Carlsbad, N. M. FIESTA DR. Exec: Th. Enterprises, Inc. Ct., Dallas, Tex. (M9-C450-D7)

Clovis, N. M. FOUR LANE DR. Exec: John Whipple and Myron Finkelstein. (M10-C444-D7)

Clovis, N. M. HILLSIDE DR. Exec: R. Finkelstein. (M10-C350-D7)

Clovis, N. M. YUCCA DR., Hwy. 70. Exec: Th. Enterprises, Inc. Ct., Dallas, Tex. (M9-C350-D7)

Hillsboro, N. M. HILL DR. Exec: Robb and Rowley. (M10-C300-D7)

Hobbs, N. M. EAGLE DR. Exec: E. L. Williamson. (M9-C500-D7)

Hobbs, N. M. SKY VU DR. Exec: Th. Enterprises, Inc. Ct., Dallas, Tex. (M9-C400-D7)

Portales, N. M. VARSITY DR., Elinda Hwy. Exec: Th. Enterprises, Inc. Ct., Dallas, Tex. (M12-C250-D7)

Roswell, N. M. STARLITE DR. Exec: Th. Enterprises, Inc. Ct., Dallas, Tex. (M9-C400-D7)

Oklahoma

Durant, Okla. SKY VUE DR. Exec: Robb & Rowley-United Ct., Dallas, Tex. (M12-C400-D7)

Idabel, Okla. BLACKS DR. Exec: A. M. Black. (M12-C200-D7)

McAlester, Okla. HIWAY 270 DR. Exec: Robb & Rowley-United Ct., Dallas, Tex. (M12-C400-D7)

McAlester, Okla. SKYVUE DR. Exec: J. D. Dankister. (M9-C400-D7)

Muskogee, Okla. HI WAY 64 DR. Exec: Noecker and Miller. (M9-C503-D7)

Muskogee, Okla. P & M DR. Exec: Robb & Rowley-United Ct., Dallas, Tex. (M9-C400-D7)

Texas

Abilene, Tex. ELMWOOD DR., Hwy. 158. Exec: R. N. Likens. (M8-C298-D7)

Abilene, Tex. PARK DR. Exec: Interstate Th. Ct., Dallas. (M12-C475-D7)

Abilene, Tex. SKYLINE DR. Exec: R. N. Likens. (M12-C350-D7)

Abilene, Tex. TOWER DR., Rt. 3, P. O. Box 61. Exec: R. A. Erickson. (M12-C350-D7)

Alice, Tex. BUCKHORN DR., Hwy. 44. Exec: H. C. Gunter. (M7-C300-D7)

Alvin, Tex. DRIVE-IN TH. Exec: Long Ct. (M12-C350-D7)

Amarillo, Tex. PALO DURO DR., Canyon Hwy. and Georgia St., Box 1212. Exec: Charles Weisenburg, W. F. W. Theatres. (M6-C350-D7)

Amarillo, Tex. SKYWAY DR. Exec: L. Dollison. (M12-C350-D7)

Amarillo, Tex. SUNSET DR., West of City. Exec: W. O. Bearden. (M7-C400-D7)

Amarillo, Tex. TRAIL DR., Hwy. 66, P. O. Box 748. Exec: W. O. Bearden. (M7-C400-D7)

Andrews, Tex. MUSTANG DR. Exec: Wallace Blankenship Ct. (M12-C260-D7)

Anson, Tex. TWILITE DR. Exec: Will Pence. (M12-C300-D7)

Argyle, Tex. COLONIAL DR., Hwy. 377, P. O. Box 44. Exec: Joseph Franklin. (M8-C350-D7)

Arlington, Tex. DRIVE-IN TH. Exec: Southwest Ths. (M10-C600-D7)

Austin, Tex. BURNETT DRIVE IN, P. O. Box 332. Exec: Ezell & Associates Ct., Dallas. (M12-C750-D7)

Austin, Tex. CHIEF DR., 5601 Dallas Hwy., Box 332. Exec: C. E. Ezell & Assoc. (M12-C814-D7)

Austin, Tex. MONTOPOLIS DR., Airport Blvd. Exec: Eddie Joseph. (M12-C600-D7)

Austin, Tex. NORTH AUSTIN DR., 6714 Dallas Hwy. Exec: Eddie Joseph. (M12-C250-D7)

Austin, Tex. SOUTH AUSTIN DR., 3900 S. Con-gress. Exec: Eddie Joseph. (M12-C400-D7)

Ballinger, Tex. HILLCREST DR. Exec: Hodge Ct. (M12-C400-D7)

Ballinger, Tex. HORSESHOE DR. Exec: R. T. Hall. (M12-C300-D7)

Baytown, Tex. DECKER DR. Exec: Jefferson Amusement Co. Ct., Beaumont. (M12-C408-D7)

Baytown, Tex. DRIVE-IN TH. Exec: J. M. Meyer, Pasadena, Tex. (M12-C* -D7)

Beaumont, Tex. CIRCLE DR., P. O. Box 2502. Exec: C. E. Ezell & Assoc. (M12-C550-D7)

Beaumont, Tex. PYRAMID DR., P. O. Box 3328. Exec: Maurice Kleinman, J & K Theatres Ct. (M12-C600-D7)

Beaumont, Tex. SPINDLETOP DR. Exec: John Ryan. (M12-C400-D7)

Beaumont, Tex. SOUTH PARK DR. Exec: South Park Drive-In Inc., Jefferson Amuse. Co. Subsidiary. (M12-C600-D7)

Beeville, Tex. BRONCO DR., P.O. Box 966. Exec: A. M. Gaines. (M12-C375-D7)

Beeville, Tex. DRIVE-IN TH. Exec: F. E. Bowman. (M12-C250-D7)

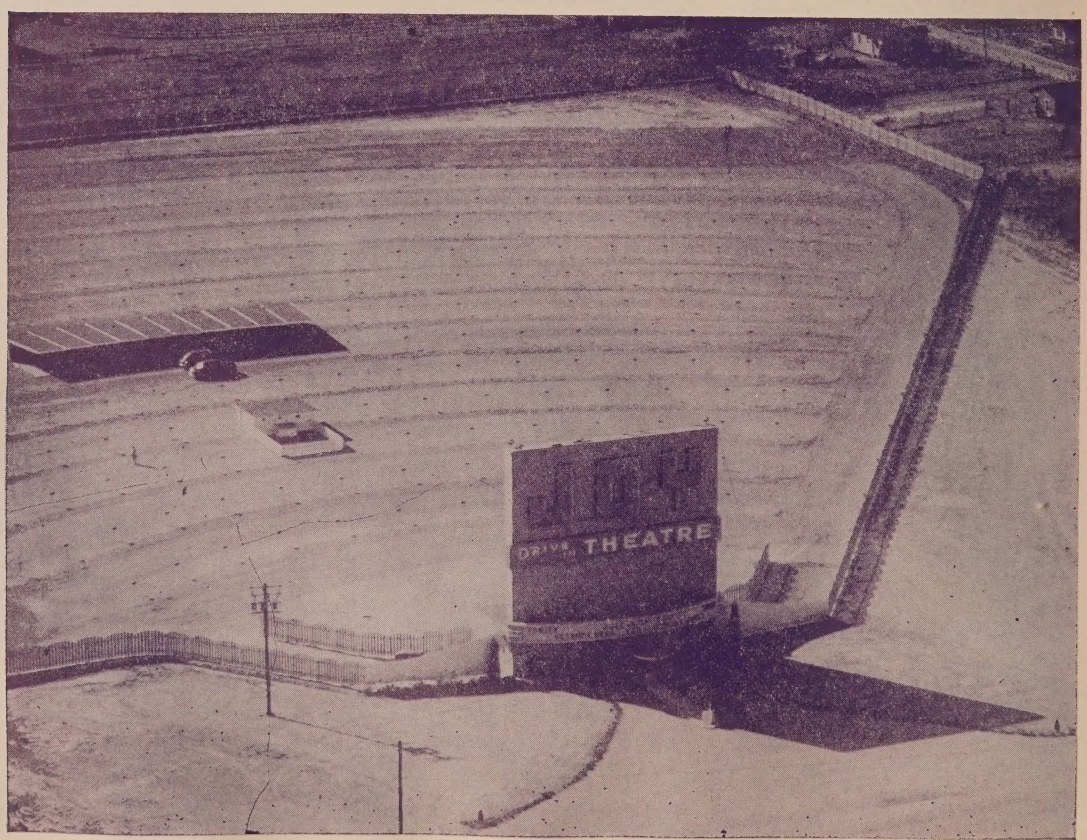
Big Lake, Tex. REAGAN DR. Exec: O. M. Kirkeby. (M12-C300-D7)

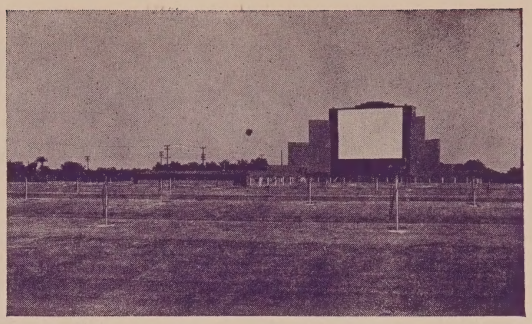
Big Spring, Tex. TERRACE DR., Hwy. 84. Exec: Robb and Rowley United Ct., Dallas. (M9-C350-D7)

Blackwell, Tex. RANEY DR., P. O. Box 35. Exec: H. C. Raney. (M12-C100-D7)

Bonham, Tex. BONHAM DR. Exec: H. S. Cole. (M12-C302-D7)

ENTRANCE under the screen tower is a distinguishing characteristic of the Joy Drive-In, Texarkana, Tex. Note marquee across whole front.





AN AIR OF RELAXATION is imparted to the Palms Drive-In, McAllen, Tex., by the screen tower mural of a Mexican taking a siesta under a palm tree. A Wagner attraction panel is at side. RIGHT: Visible in this view looking toward the screen is the well-equipped children's playground.

Bowie, Tex. TRAIL DR. Exec: C. E. Campbell. (M12-C300-D7)

Brady, Tex. SCENIC DR. Exec: O. M. Kirkeby. (M9-C300-D7)

Brazos, Tex. BRAZOS DR. Exec: Posie Williams and Tom Hooser. (M12-C350-D9)

Breckenridge, Tex. BRECK DR. Exec: Lynn Bigler. (M12-C250-D7)

Breckenridge, Tex. CORRAL DR. Exec: Creagh and Klatt. (M12-C275-D7)

Breckenridge, Tex. TRAIL DR. Exec: R. A. Noret. (M12-C300-D7)

Brenham, Tex. STARLITE DR. Exec: C. H. Schroeder. (M12-C200-D7)

Bridgeport, Tex. LAKE DR. Exec: Steve Curley. (M12-C250-D7)

Brownfield, Tex. RIG DR. Exec: Jones Ths. (M12-C300-D7)

Brownfield, Tex. RUSTIC DR. Exec: Jones Ths. (M12-C300-D7)

Brownsville, Tex. CHARRO DR., 2340 Boca Chica Hwy., Box 1452. Exec: Ezell and Associates Ct., Dallas. (M12-C548-D7)

Brownsville, Tex. STAR DR., Hwy. 77. Exec: Howard Metzger. (M12-C370-D7)

Brownwood, Tex. CAMP BOWIE DR. Exec: J. Needham. (M12-C400-D7)

Brownwood, Tex. SUNSET DR., Hwy. 84. Exec: L. D. Brown. (M12-C500-D7)

Bryan, Tex. SKYWAY DR., Hwy. 6. Exec: Jack A. Farr. (M9-C500-D7)

Carrizo Springs, Tex. WINTER GARDEN DR. Exec. A. Majek and H. W. Hartung. (M12-C300-D7)

Carthage, Tex. SMITH'S DR. Exec: Wilton Smith. (M12-C400-D7)

Childress, Tex. CARVU DR. Exec: Phillips and Layton. (M12-C350-D7)

Cisco, Tex. JOY DR. Exec: Joy N. Houck, Joy Theatres Ct. (M12-C250-D7)

Clarksville, Tex. REX DR. Exec: J. V. Kunkel, H. L. Caldwell. (M12-C250-D7)

Cleburne, Tex. CHIEF DR. Exec: Video Ind. Theatres, Inc. (M12-C300-D7)

Coleman, Tex. OAKS DR., Hwy. 84. Exec: R. Duus, 303 Neuces St. (M12-C250-D7)

Colorado, Tex. TEXAS DR. Exec: Robb and Rowley United Ct., Dallas. (M12-C400-D7)

Conroe, Tex. HI-YI DR. Exec: Chas. Tigner. (M12-C300-D7)

Corpus Christi, Tex. BLVD. DR., Lexington Blvd. Exec: Southwest Theatres. (M12-C300-D7)

Corpus Christi, Tex. CORPUS DR., Hwy. 9, Box 2270. Exec: Southwest Theatres Ct. (M12-C700-D7)

Corpus Christi, Tex. GULF DR., 4044 South Port Ave. Exec: Ezell and Associates Ct., Dallas. (M12-C750-D7)

Corpus Christi, Tex. TEXAS DR. Exec: Southwest Ths. (M12-C700-D7)

Corsicana, Tex. HILLSIDE DR. Exec: Sidney Miller. (M12-C* -D7)

Corsicana, Tex. NAVARRO DR., Hwy. 287. Exec: Damon Frank. (M12-C300-D7)

Cuero, Tex. CUERO DR. Exec: Video Independent Theatres, Inc. (M12-C250-D7)

Dallas, Tex. BUCKNER BLVD. DR., Route 4, Box 235. Exec: Ezell and Associates Ct. (M12-C660-D7)

Dallas, Tex. CHALK HILL DR., 4501 W. Davis St. Exec: Ezell and Associates Ct. (M12-C650-D7)

Dallas, Tex. CINDERELLA DR. Exec:* (M12-C900-D7)

Dallas, Tex. DENTON RD. DR. Exec: Leon Theatres, 2011½ Jackson St. (M12-C850-D7)

Dallas, Tex. GARLAND RD. DR., Garland Rd. Exec: Leon Theatres, 2011½ Jackson St. (M12-C660-D7)

Dallas, Tex. HAMPTON RD. DR., 2833 So. Hampton Rd. Exec: Leon Thea., 2011½ Jackson St. (M12-C750-D7)

Dallas, Tex. HI VUE DR., 5525 S. Beckley. Exec: Conoman and P. E. Moran. (M12-C500-D7)

Dallas, Tex. JEFFERSON DR. Exec: Harold Gibbons. (M12-C637-D7)

Dallas, Tex. KAUFMAN PIKE DR., 7041 - 2nd Ave. Exec: Chas. W. Weisenburg, W. F. W. Theatres. (M12-C600-D7)

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Dallas, Tex. NORTHWEST HIGHWAY DR., 2031 Jackson St. Exec: Ezell and Associates Ct. (M12-C552-D7)

Dallas, Tex. SAMUEL DR. Exec: Jas. Riggs. (M12-C425-D7)

Dallas, Tex. SOUTH LOOP DR. Exec: Harold Brooks. (M12-C675-D7)

Del Rio, Tex. CENIZA DR. Exec: Robb and Rowley United Ct., Dallas. (M12-C400-D7)

Denton, Tex. RANCHO DR. Exec: Lester Dollison. (M12-C400-D7)

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Devine, Tex. MEDINA VALLEY DR., P. O. Box 494. Exec: Carpenter and Reed. (M12-C340-D7)

Dumas, Tex. PRAIRIE DR., P. O. Box 367. Exec: H. S. McMurry. (M12-C* -D7)

Eagle Pass, Tex. EAGLE DR. Exec: P. R. Andrews. (M12-C575-D7)

Edcouch, Tex. SKYVIEW DR. Exec: F. P. Archer. (M9-C300-D7)

Electra, Tex. HOME DR., Hwy. 387. Exec: W. F. McSpaddon. (M12-C300-D7)

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El Paso, Tex. BRONCHO DR., Hwy. 80. Exec: Abraham and Lou John. (M12-C550-D7)

El Paso, Tex. CROSSROADS DR. Exec: C. E. Peterson. (M12-C200-D7)

El Paso, Tex. DEL NORTE DR., Hwy. 80, Newman Rd. Exec: Lone Star Ths. (M12-C300-D7)

El Paso, Tex. EL PASO DR., Hwy. 290, Chelsea Dr. Exec: Lone Star Theatres. (M12-C300-D7)

El Paso, Tex. FIESTA DR., P. O. Box 172. Exec: J. B. Beeson. (M12-C500-D7)

El Paso, Tex. TRAIL DR. Exec: L. M. Bernstein. (M12-C250-D7)

Ennis, Tex. VILLAGE DR. Exec: T. L. Ritchie, Atlanta, Texas. (M12-C400-D7)

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Fort Worth, Tex. WESTERNER DR. Exec: Phil Isley. (M12-C500-D7)

Fredericksburg, Tex. 87 DR. Exec: H. L. Durst. (M12-C300-D7)

Freeport, Tex. SURF DR. Exec: J. B. Arthur, Box 602, Velasco, Tex. (M12-C600-D7)

Freeport, Tex. TRADE WIND DR. Exec: Love and Rust. (M12-C600-D7)

Freer, Tex. FREER DR. Exec: H. T. Telford. (M12-C300-D7)

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Gatesville, Tex. CIRCLE-S DR. Exec: Skelton Bros. (M12-C300-D7)

Georgetown, Tex. DUSK DR. Exec: Paul Klatt, Fred Glatt and R. Creagh. (M12-C250-D7)

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Houston, Tex. SOUTH MAIN DR., Old Fork Bend Rd., Box 6556. Exec: Ezell and Associates Ct., Dallas. (M12-C747-D7)

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Kerrville, Tex. BOLERO DR., Hwy. 27. Exec: C. H. Mitchamore. (M12-C350-D7)

Kilgore, Tex. KILGORE DR. Exec: L. N. Crim and East Texas Theatres, Inc. (M12-C600-D7)

Killeen, Tex. KILLEEN DR. Exec: Robb and Rowley United Ct., Dallas. (M12-C400-D7)

Kingsville, Tex. HIWAY DR. Exec: Dr. P. S. Joseph and Chester Kyle. (M12-C300-D7)

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Midland, Tex. TEXAN DR., Hwy. 80. Exec: Jones & Jones. (M12-C300-D7)

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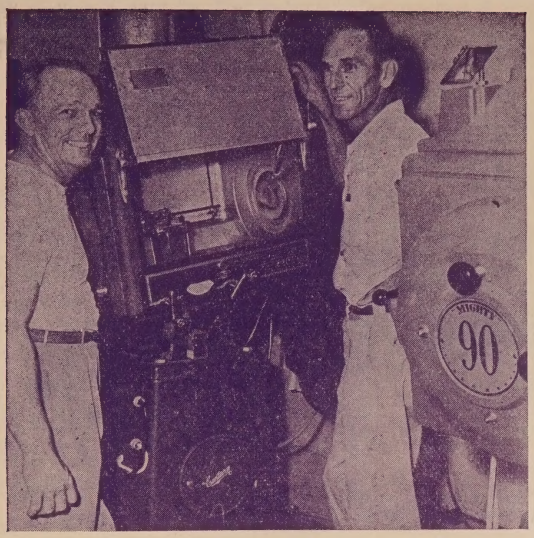

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Salida, Colo. GRAY DR., Hwy. 50. Exec: Ben and Louis Gray. (M8-C350-D7)

Sterling, Colo. STARLITE DR., P. O. Box 1592. Exec: C. Smith. (M8-C350-D7)

Trinidad, Colo. PEAK DR. Exec: John Sawaya. (M8-C325-D7)

Nebraska

Alliance, Neb. STARLITE DR. Exec: Park Dobson, Jr. (M7-C300-D7)

Benkelman, Neb. DRIVE IN. Exec: Jimmy Powell and Verne Olson. (M7-C* -D7)

McCook, Neb. McCOOK DRIVE IN. Exec: William Hanke and Jasper Geddings. (M7-C300-D7)

Mitchell, Neb. HI WAY DR. Exec: Brown and Marty Theatre Co. (M7-C300-D7)

North Platte, Neb. PAWNEE DR. Exec: W. L. Smith. (M7-C350-D7)

Scottsbluff, Neb. BIGGERS DR. Exec. Floyd Biggers. (M7-C500-D7)

Sidney, Neb. DRIVE-IN. Exec: Bob Carter. (M8-C350-D7)

New Mexico

Alamogordo, N. M. STARLITE DR. Exec: Marshall R. Sanquinet. (M7-C300-D7)

Artesia, N. M. CIRCLE B DR. Exec: Ray Bartlett. (M7-C350-D7)

Espanola, N. M. CHICO DR. Exec: Fidel Ths., Inc. (M7-C* -D7)

Farmington, N. M. MESA DR. Exec: San Juan Ent. Frank A. Budai. (M7-C300-D7)

Las Cruces, N. M. ORGAN DR. Exec: H. F. Boyington. (M7-C370-D7)

Las Vegas, N. M. VEGAS DR. Exec: Gus Daskalos. (M7-C350-D7)

Raton, N. M. 85 DR. Exec: Hubbard and Murphy Th. Ct. (M7-C320-D7)

Santa Fe, N. M. PUEBLO DR. Exec: Salmon & Greer. (M7-C500-D7)

Tucumcari, N. M. COUNTY DR. Exec: L. R. Yessler. (M10-C378-D7)

Tucumcari, N. M. CANAL DR. Exec: Milas Hurley. (M7-C400-D7)

South Dakota

Rapid City, S. D. STARLIGHT DR. Exec: Black Hills Amuse. Ct., Deadwood. (M7-C550-D7)

Wyoming

Casper, Wyo. SKYLINE DR. Exec: Skyline Amuse. Ct. (M7-C400-D7)

Cheyenne, Wyo. MOTOR-VU DR. Exec: Skyline Amuse. Ct. (M7-C450-D7)

Cheyenne, Wyo. STARLITE DR. Exec:* (M7-C* -D7)

Cody, Wyo. PARK DR. Exec:* (M7-C* -D7)

Cody, Wyo. WEST DR. Exec: Richard Haberman. (M7-C300-D7)

Lander, Wyo. DIANE DR. Exec: A. M. Goodrich. (M7-C300-D7)

Laramie, Wyo. SKYLINE DR. Exec: Skyline Amuse. Ct. (M7-C200-D7)

Lovell, Wyo. MIDWAY DR. Exec: Al Davis, Byron, Wyo. (M7-C211-D7)

Newcastle, Wyo. STARLIGHT DR. Exec: Starlight Investment Co. J. Kearney . ((M7-C200-D7)

Powell, Wyo. PAUL'S DR. Exec: Paul McCalmon. (M7-C200-D7)

Rawlins, Wyo. SKYLINE DR. Exec: Skyline Amuse. Ct. (M7-C300-D7)

Riverton, Wyo. KNIGHT DR. Exec: Tom Knight. (M7-C400-D7)

Riverton, Wyo. WEST DR. Exec: J. W. Neighbors. (M8-C427-D7)

Rock Springs, Wyo. STARLITE DR. Exec: Starlite Theatre Co. (M7-C200-D7)

Sheridan, Wyo. SKYLINE DR. Exec: Skyline Amusement Ct. R. H. Bennett. (M7-C438-D7)

Thermopolis, Wyo. LEO'S DR. Exec: Leo Ronco. (M7-C350-D7)

Torrington, Wyo. KAR VU DR. Exec: Alex Stewart. (M7-C342-D7)

Torrington, Wyo. WEST DR. Exec: Harry McDonald. (M8-C360-D7)

Torrington, Wyo. KAR VU DR. Exec: Charles D. Steward. (M7-C342-D7)

DES MOINES TERRITORY

Iowa

Algona, Ia. STARLIGHT DR. Exec: Paul R. McCarthy. (M7-C350-D7)

Ames, Ia. RANCH DR. Exec: Central States Ct. (M7-C400-D7)

Atlantic, Ia. CORRAL DR. Exec: Pioneer Theatre Corp. Ct. (M7-C300-D7)

Burlington, Ia. BURLINGTON DR., Agency Rd. Exec: Central-States Ct. (M7-C400-D7)

Carroll, Ia. DRIVE IN. Exec: Pioneer Theatre Corp. Ct. (M7-C300-D7)

Cedar Rapids, Ia. TRI STATES DR., Hwys. 30 and 149 SW. Exec: Tri-States Ct. (M7-C500-D7)

Clear Lake, Ia. CLEAR LAKE DR. Exec: Central States Ct. (M6-C600-D7)

Clinton, Ia. DRIVE IN. Exec: Central-States Ct. (M7-C400-D7)

Davenport, Ia. BEL AIR DR., 2701 W. Locust St. Exec: J. Geertz. (M7-C600-D7)

Des Moines, Ia. DES MOINES DR., S.E. 14th and Hart Sts. Exec: Tri-States Ct. (M7-C700-D7)

Des Moines, Ia. TOWN DR., 1412 32nd St. Exec: Jack Siegel. (M7-C500-D7)

Dubuque, Ia. DRIVE IN, John Deere Rd. Exec: Tri-States Ct. (M7-C500-D7)

Fort Dodge, Ia. DRIVE IN, Hwy. 169, P. O. Box 277. Exec: W. Warner. (M7-C224-D7)

Iowa City, Ia. DRIVE IN. Exec: Central States Ct. (M7-C300-D7)

Maquoketa, Ia. 61 DR. Exec: Allen & Franklin. (M7-C286-D7)

Marshalltown, Ia. MARSHALLTOWN DR., P.O. Box 184. Exec: H. N. Schrodt. (M7-C300-D7)

Mason City, Ia. DRIVE IN. Exec: Central-States Ct. (M7-C500-D7)

Milford, Ia. LAKELAND DR. Exec: J. L. Travis. (M7-C300-D7)

Newton, Ia. DRIVE IN. Exec: S. M. Rhodes. (M7-C250-D7)

Oskaloosa, Ia. DRIVE IN. Exec: Tri-States Ct. (M7-C400-D7)

Ottumwa, Ia. DRIVE IN, Municipal Airport: Exec: Tri-States Ct. (M7-C500-D7)

Panora, Ia. STAR VUE DR. Exec: Dorothy Kean and Mrs. Margaret Gibson. (M7-C250-D7)

Perry, Ia. CORRAL DRIVE IN. Exec: Pioneer Theatre Corp. Ct. (M7-C300-D7)

Spencer, Ia. CORRAL DRIVE IN. Exec: Pioneer Theatre Corp. Ct. (M7-C300-D7)

Storm Lake, Ia. DRIVE IN. Exec: Pioneer Theatre Corp Ct. (M7-C350-D7)

Waterloo, Ia. SKYVUE DR., Hwy. 20 E. Exec: Stephen A. Oellerich and Philip E. Winslow, Mid West Drive-In Ths. (M7-C450-D7)

Waterloo, Ia. STARLITE DR., Hwy. 218, P. O. Box 485. Exec: Steven A. Oellerich. (M7-C500-D7)

Webster City, Ia. DRIVE IN. Exec: Pioneer Theatre Corp. Ct. (M7-C250-D7)

Illinois

Moline, Ill. MEMRI DR., Hwys. 67, 92 and 6. Exec: W. A. Brotman. (M7-C700-D7)

Moline, Ill. SKY HI DR. Exec: Elflow Th. Corp. (M7-C500-D7)

DETROIT TERRITORY

Michigan

Adrian, Mich. LENAWEE AUTO TH., 3000 W. Adrian Rd., R.F.D. No. 3. Exec: Adrian Drive-In Thea. Co., Inc. (M7-C300-D7)

Albion, Mich. ALBION DR. Exec: W. Campbell, Reading, Mich. (M7-C290-D7)

Ann Arbor, Mich. YPSI ANN DR., 4675 Washtenaw St. Exec: A. Robinson. (M7-C500-D7)

Battle Creek, Mich. AUTO TH., Rt. 12. Exec: Paul O. Brake. (M7-C500-D7)

Bay City, Mich. STARLIGHT DR. Exec: Ashmun Th. Ct. (M7-C650-D7)

Bay City, Mich. TUSCOLA DR., Rt. M-15. Exec: H. Bernstein. (M7-C750-D7)

Benton Harbor, Mich. STARLITE DR., Rt. M-139. Exec: J. M. McKernan. (M7-C450-D7)

Brighton, Mich. BRIGHTON DR. Exec: C. A. Anderson. (M7-C500-D7)

Cadillac, Mich. CADILLAC DR. Exec: L. E. Stephenson and Ceylon Caszatt. (M7-C380-D7)

Caro, Mich. CARO DR. Exec: Ashmun Th. Ct. (M7-C500-D7)

Caseville, Mich. BLUE SKY DR. Exec: Robert and Harold Schuckert. (M7-C350-D7)

Clare, Mich. SUNDOWN DR. Exec: James Olsen and Lee Ward. (M7-C500-D7)

Coldwater, Mich. COLDWATER DR. Exec: William Schulte. (M7-C300-D7)

Constantine, Mich. AUTO TH., Rt. 131. Exec: Hal Lego. (M7-C125-D7)

Corunna, Mich. SKYWAY OUTDOOR THEATRE. Exec: William A. Rice. (M7-C350-D7)

Dearborn, Mich. DEARBORN DR., 26500 Ford Rd. Exec: James Ross. (M7-C1040-D7)

Dearborn, Mich. FORD-WYOMING DR. Exec: John Wagner. (M7-C750-D7)

Deckerville, Mich. HI WAY DR. Exec: C. H. Clements. (M7-C400-D7)

Detroit, Mich. BELAIR DR. Exec: Komer & Goldberg. (M7-C1750-D7)

Detroit, Mich. EAST SIDE DR., 19440 Harper St. Exec: Phil Smith Ct., Boston, Mass. (M7-C625-D7)

Detroit, Mich. TOWN DR., 9401 Telegraph Rd. Exec: Irving Goldberg. (M7-C1100-D7)

East Lansing, Mich. CREST DR., P. O. Box 91. Exec: William Annand. (M7-C700-D7)

Ecorse, Mich. ECORSE DR., Rt. 25. Exec: Nicholas George. (M7-C1000-D7)

Ecorse, Detroit, Mich. FORT DR., Eureka and Fort. Exec: Nicholas George. (M7-C1000-D7)

Farmington, Mich. GRAND RIVER DR. Exec: Grand River Dr., Inc. (M7-C750-D7)

Ferndale, Mich. WEST SIDE DR., 8 Mile and Schaefer Rds. Exec: Phil Smith Ct., Boston, Mass. (M7-C700-D7)

Flint, Mich. CORUNNA WEST SIDE DR., Rt. M-21. Exec: W. M. Rice. (M7-C775-D7)

Flint, Mich. DORT EAST SIDE DR., 3750 Dort Hwy. Exec: W. M. Rice. (M7-C775-D7)

Fraser, Mich. GRATIOT DR., 31900 Gratiot St. Exec: Alex Schreiber Ct., Detroit. (M7-C1000-D7)

Grand Rapids, Mich. BELTLINE DR., 1400 W. 28th St. Exec: Jack Locks. (M7-C850-D7)

Grand Rapids, Mich. DRIVE IN, 5566 S. Division St. Exec: Jack Locks. (M7-C600-D7)

Hastings, Mich. DRIVE IN. Exec: Waxman Ct. (M7-C275-D7)

Hillsdale, Mich. DRIVE IN, Rt. M-99. Exec: Howard Sharpley. (M7-C300-D7)

Holland, Mich. STARLITE DR. Exec: Waxman Ct. (M7-C350-D7)

Houghton Lake, Mich. OLSON DR. Exec: James Olson. (M7-C500-D7)

Hubbard Lake, Mich. SKY-VUE DR. Exec:* (M7-C* -D7)

Jackson, Mich. JACKSON DRIVE IN, 4400 Ann Arbor Rd. Exec: Lawrence J. Aubry. (M7-C520-D7)

Jackson, Mich. HILL TOP DR. Exec: Larry Dingee and John Buck. (M7-C150-D7)

Kalamazoo, Mich. AUTO TH., 4488 Portage Rd. Exec: A. W. Ochs. (M7-C400-D7)

Lansing 15, Mich. LANSING DR., 5097 S. Cedar St. Exec: Lawrence J. Aubry. (M7-C400-D7)

Lapeer, Mich. SUNSET DR. Exec: Robert and Harold Schuckert. (M7-C500-D7)

Manistee, Mich. CHIPPEWA DR. Exec: R. S. Evans, Waxman Ct. (M7-C276-D7)

Marlette, Mich. H & S DR. Exec: Clark Ct. (M7-C250-D7)

Marysville, Mich. MARYSVILLE DR. Exec: Alex Slendak. (M7-C600-D7)

Midland, Mich. SUNSET DR. Exec: Cassidy Th., Inc. (M7-C500-D7)

Mikado, Mich. MIKADO DR. Exec: J. Ellis. (M7-C125-D7)

Monroe, Mich. DIXIE DR., 6720 N. Monroe St. Exec: Joseph Weisberg. (M7-C300-D7)

Morenci, Mich. SKYLINE DR. Exec: L. McLain. (M7-C200-D7)

Mount Morris, Mich. NORTH FLINT DR., P.O. Box 65. Exec: R. O. Findley. (M7-C760-D7)

Muskegon, Mich. AUTO DR., 4291 Grand Haven Rd. Exec: A. W. Ochs. (M7-C400-D7)

Muskegon, Mich. N. K. DR. Exec: Nick Kuris. (M7-C1000-D7)

Niles, Mich. NILES OUTDOOR TH., Rt. 31. Exec: Manta and Rose Ct. (M7-C1000-D7)

Plainwell, Mich. 131 DR., Hwy. 131. Exec: Harold Kortes and Charles Sears. (M7-C300-D7)

Pontiac, Mich. BLUE SKY DR., 2150 Opdyke St. Exec: A. Robinson. (M7-C650-D7)

Pontiac, Mich. PONTIAC DR. Exec: Mutual Th. (M7-C720-D7)

Port Huron, Mich. BLUE WATER DRIVE IN, 5737 Lake Rd. Exec: Blue Water Th. Co. (M7-C600-D7)

Royal Oak, Mich. OAK DR. Exec: Alden Smith. (M7-C1000-D7)

Saginaw, Mich. SAGINAW AUTO TH., 5151 Genesee St. Exec: A. W. Ochs. (M7-C400-D7)

Saginaw, Mich. TWILIGHT DR., 10 Mile Rd. Exec: R. Ashmun. (M7-C500-D7)

St. Johns, Mich. FAMILY DR. Exec: M. J. Blackburn. (M7-C400-D7)

St. Louis, Mich. SKY TOP DR. Exec: Clark Ct. (M7-C400-D7)

Stevensville, Mich. ST. JOE AUTO TH. Exec: M. H. Johnson. (M7-C450-D7)

Traverse City, Mich. TRAVERSE DR. Exec: Glenn Wallace and Bion Rockwell. (M7-C350-D7)

Waterford, Mich. STARLITE DR. Exec: Starlite Theatre Corp. (M7-C600-D7)

Watervliet, Mich. SUNSET DR. Exec: Frank Jacobs. (M7-C340-D7)

Wayne, Mich. WAYNE DRIVE IN. Exec: W. D. Shafer, c/o State Theatre. (M7-C800-D7)

INDIANAPOLIS TERRITORY

Indiana

Anderson, Ind. DRIVE IN, Hwy. 32. Exec: Alliance Theatre Ct. (M7-C480-D7)

Angola, Ind. LAKELAND DR. Exec: Clair Stuckey and M. H. Schneidler. (M7-C840-D7)

Attica, Ind. DRIVE IN. Exec: A. E. Campbell Ct. (M7-C500-D7)

Bainbridge, Ind. MEADOWBROOK DR. Exec: Archie Allen. (M7-C300-D7)

Bedford, Ind. BEDFORD DR. Exec: A. E. Campbell Ct. (M7-C500-D7)

Bloomington, Ind. DRIVE IN. Exec: Roy O'Keefe. (M7-C500-D7)

Centerton, Ind. CENTERBROOK DR. Exec: Chas. Morrison. (M7-C400-D7)

Charlestown, Ind. FAMILY DR., P. O. Box 215. Exec: L. E. Grewell, 514 Forum Ave., Louisville 8, Ky. and Fred J. Belcher. (M7-C* -D7)

Clarksville, Ind. CLARKSVILLE DR. Exec: S. J. Switow. (M7-C550-D7)

Clayton, Ind. MAPLECROFT DR. Exec: Charles F. Morrison, 1250 Waldemere St., Indianapolis. (M7-C250-D7)

Clermont, Ind. DE LUXE DR. Exec: Paul Boatman. (M7-C500-D7)

Clinton, Ind. DRIVE IN. Exec: Joe Million. (M7-C400-D7)

Columbus, Ind. COLUMBUS DR. Exec: Trueman T. Rembusch, Syndicate Theatres Ct., Franklin. (M9-C500-D7)

Connersville, Ind. CONNERSVILLE DR., 2 mi. W. of Connersville. Exec: Affiliated Th. (M7-C556-D7)

Corydon, Ind. SKY AIR DR. Exec: Owen Yetter. (M7-C350-D7)

Crawfordsville, Ind. BEN HUR DR. Exec: Bert Rayburn. (M7-C450-D7)

Crawfordsville, Ind. C-VILLE DR. Exec: Pete Fortune. (M7-C400-D7)

Decatur, Ind. DRIVE IN. Exec: Gatchell & Calvert. (M7-C525-D7)

Elletsville, Ind. SUNDOWN DR. Exec: J. Cramer. (M7-C400-D7)

Elwood, Ind. ELWOOD DR. Exec: Roy O'Keefe, Mgr. (M7-C500-D7)

Evansville, Ind. EVANSVILLE DR., Soonerville Hwy. Exec: H. N. Coleman. (M7-C600-D7)

Evansville, Ind. FAMILY DR., P.O. R.R. 10. Exec: Ted Graulich. (M7-C425-D7)

Evansville, Ind. SUNSET DR., P. O. Box 2038, Station D. Exec: Joe Nickolick. (M7-C750-D7)

Fort Wayne, Ind. SUNSET DR. Exec: Herbert Ochs. (M7-C500-D7)

Fort Wayne, Ind. FORT WAYNE DR., 5800 Bluffton Rd. Exec: Herbert Ochs. (M7-C500-D7)

Fort Wayne, Ind. WAYNE AUTO TH., Hwy. 33. Exec: Walter Frie. (M7-C450-D7)

Fountaintown, Ind. MOONLIGHT DR., Hwy. 52. Exec: Irving Tamler. (M7-C350-D7)

Frankfort, Ind. FRANKFORT DR. Exec: Alliance Theatres Ct. (M7-C500-D7)

Garrett, Ind. KALAFAT DR. Exec: A. C. Kalafat. (M7-C* -D7)

Geneva, Ind. LIMBERLOST DR. Exec: Clyde Nihiser. (M7-C250-D7)

Greencastle, Ind. O-C MIDWAY DR., Rts. 40-43, R.R. #1, Cloverdale. Exec: Gilbert Ogles and W. Campbell. (M7-C500-D7)

Greenwood, Ind. GREENWOOD DR., P.O. R.R. 3. Exec: A. W. Hansen. (M7-C600-D7)

Greenwood, Ind. MERIDIAN DR. Exec: John W. Browning. (M7-C500-D7)

Huntington, Ind. HUNTINGTON DR. Exec: Huntington Amusement Co. (M7-C600-D7)

Indianapolis, Ind. SHADELAND OUTDOOR TH. Exec: Cantor Amusements, Inc. (M7-C1000-D7)

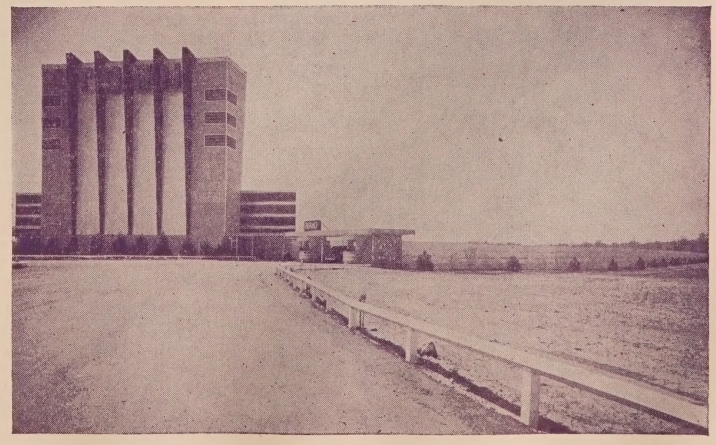
Indianapolis, Ind. THEATRE AIR TWIN DR. Exec: A. E. Campbell Ct. (M7-C2000-D7)

Indianapolis 44, Ind. WESTLAKE DR., Rt. 2, Box 562W. Exec: Earl Bell. (M7-C1700-D7)

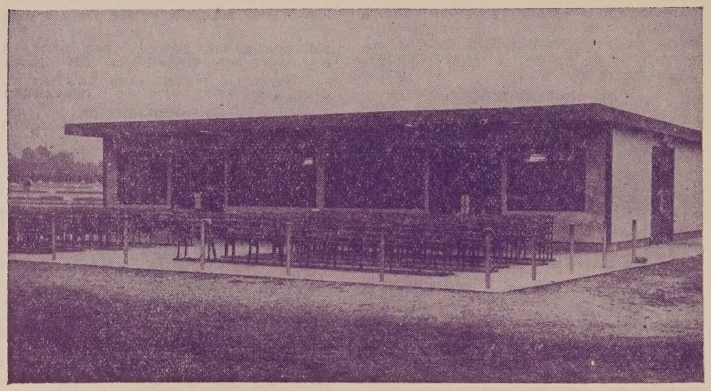
Indianapolis, Ind. WESTSIDE OUTDOOR TH. Exec: Forrest Songer. (M7-C600-D7)

Jasper, Ind. FAMILY DR. Exec: Midway Amuse. Corp. (M*-C400-D*)

DEEMED BY MANY TO BE A MODEL DRIVE-IN, the Town, Detroit, Mich., has a facing of corrugated aluminum on the screen tower which matches the fence that encloses the entire spacious ramp area.



DEEPLY FLUTED COLUMNS ON THE SCREEN TOWER of the Bel-Air Drive-In, Versailles, Ind., give it an impressive appearance that is carried on in the eye-catching attraction board. BELOW: Ample seating for walk-in patrons is provided at the 2,300-car Theatair Twin Drive-In, Indianapolis, Ind.



Jeffersonville, Ind. THEATAIR DR. Exec: A. E. Campbell Ct. (M7-C500-D7)

Knox, Ind. MELODY DR., Rt. 3. Exec: J. R. Hand. (M7-C300-D7)

Kokomo, Ind. KOKOMO DR., Hwy. 54. Exec: Alliance Theatres Ct. (M7-C500-D7)

Lafayette, Ind. EAST DR., Hwy. 26. Exec: Fourth Ave. Amuse. Ct. (M7-C450-D7)

Lafayette, Ind. WEST SIDE DR. Exec: Fourth Avenue Amusement Co. (M7-C500-D7)

Lawrence, Ind. LAWRENCE DR., Pendleton Pike, P.O. Box 202. Exec: Phil Smith Ct., Boston, Mass. (M7-C1000-D7)

Linton, Ind. LINTON DR. Exec: A. E. Campbell Ct. (M7-C300-D7)

Logansport, Ind. SKYLINE DR., P.O. R.R. 17. Exec: Alliance Theatres Ct. (M7-C600-D7)

Madison, Ind. SKYLINE DR. Exec: Louis Chowing. (M7-C400-D7)

Marion, Ind. HIGHWAY DR., 26th St. and Bypass. Exec: Ralph Marcucciili. (M7-C640-D7)

Marion, Ind. MARIONAIR DR., 620 W. 3rd St. Exec: Alliance Th. Ct. (M7-C500-D7)

Martinsville, Ind. AIRPORT OUTDOOR TH., 990 S. Lincoln St. Exec: A. E. Campbell Ct. (M7-C280-D7)

Martinsville, Ind. DRIVE IN. Exec:* (M7-C* -D7)

Maywood, Ind. MAYWOOD DR. Exec: Melvin E. Cox. (M7-C500-D7)

Mechanicsburg, Ind. MAPLECROFT DR. Exec: Charles F. Morrison, 1250 Waldemere St., Indianapolis. (M7-C400-D7)

Monticello, Ind. MONTICELLO DR., P. O. Box 222. Exec: A. L. Taylor. (M7-C400-D7)

Mooresville, Ind. TEMPLETON'S WHEEL IN TH., Hwy. 67. Exec: Orval Templeton. (M7-C300-D7)

Muncie, Ind. MUNCIE DR. Exec: Y and W Management Corp. (M7-C500-D7)

Muncie, Ind. SKI HI DR. Exec: Y & W Management Corp. (M7-C600-D7)

New Castle, Ind. SKYDROME TH., Spiceland Rd. Exec: Marcus-Wolf and Mendelssohn. (M7-C600-D7)

Oakland City, Ind. OAKLAND DR. Exec: A. E. Campbell Ct. (M7-C350-D7)

Osgood, Ind. BELLAIRE DR. Exec: Carl Rief. (M7-C300-D7)

Portland, Ind. BEACON DR. Exec: Richard Norton. (M7-C500-D7)

Princeton, Ind. PRINCETON DR. Exec: T. Mendelessohn. (M7-C500-D7)

Richmond, Ind. NATIONAL HI WAY DR. Exec: Robert Hudson. (M7-C480-D7)

Rockville, Ind. FAMILY DR. Exec: Forrest Songer. (M7-C300-D7)

Salem, Ind. NEW DR. Exec: H. R. Blankenbaker. (M7-C500-D7)

Scottsburg, Ind. MOONGLO DR. Exec: Atkins & Hoffman. (M7-C500-D7)

Seeleyville, Ind. CORRAL DR., Hwy. 40. Exec: F. O. Hillgoss. (M7-C500-D7)

Seymour, Ind. STARDUST DR. Exec: C. Massy. (M7-C525-D7)

Shelbyville, Ind. SHELBY DR. Exec: T. Mendelssohn. (M7-C500-D7)

Sullivan, Ind. SULLIVAN DR. Exec: Y & W Management Corp. (M7-C350-D7)

Tell City, Ind. STARLITE DR. Exec: E. L. Ornstein. (M7-C420-D7)

Terre Haute, Ind. EAST SIDE AUTO TH., R.R. 5. Exec: Marcus-Wolf and Mendelssohn. (M7-C600-D7)

Terre Haute, Ind. TERRE HAUTE DR., N. Lafayette Ave. Exec: T. Mendelssohn. (M7-C600-D7)

Veedersburg, Ind. 41 DRIVE IN. Exec: Joe Million. (M7-C335-D7)

Vincennes, Ind. ALLISON DR., St. Rd. 50 W. Exec: Alliance Theatres Ct. (M7-C550-D7)

Warsaw, Ind. DRIVE IN. Exec: Maller Circuit. (M7-C600-D7)

Washington, Ind. EAST DR. Exec: Switow Circuit. (M7-C* -D7)

Winchester, Ind. AIR LINE DR. Exec: M. Make. (M7-C500-D7)

Kentucky

Bardstown, Ky. GYPSY DR. Exec: J. N. Burnett. (M7-C400-D7)

Bowling Green, Ky. LOST RIVER DR. Exec: A. E. Campbell. (M7-C600-D7)

Bowling Green, Ky. SUNSET DR., P.O. Box 894. Exec: Warren Ent. (M7-C400-D7)

Elizabethtown, Ky. STARLITE DR. Exec: Sudekum Ct. (M8-C400-D7)

Glasgow, Ky. BREEZE DR. Exec: A. E. Campbell Ct. (M7-C250-D7)

Glasgow, Ky. STAR DR. Exec: Affiliated Ct. (M7-C563-D7)

Hopkinsville, Ky. B & W DR., Hwy. 49. Exec: George Edwards and Shelby McCallum. (M7-C382-D7)

Horse Cave, Ky. TWIN CITY DR. Exec: L. B. Bail and Bill Thompson. (M7-C550-D7)

Lebanon, Ky. DRIVE IN, Hwy. 49. Exec: C. C. Sims. (M7-C300-D7)

Louisville, Ky. KENWOOD DR. Exec: Wilbur Fields. (M7-C700-D7)

Louisville, Ky. PARKWAY DR., P.O. Box 480, Rt. 5. Exec: A. E. Campbell Ct. (M7-C680-D7)

Louisville, Ky. PRESTON DR. Exec: S. J. Switow. (M7-C770-D7)

Louisville, Ky. SKYWAY DR. Exec: A. E. Campbell Ct. (M7-C780-D7)

Louisville, Ky. TWIN DR. Exec: A. E. Campbell Ct. (M7-C1900-D7)

Madisonville, Ky. SUNSET DR. Exec: Sudekum Ct. (M8-C500-D7)

Pendleton, Ky. LAKEVIEW DR. Exec: A. E. Campbell Ct. (M7-C200-D7)

Saint Matthews, Ky. EAST DR., Hwy. 31. Exec: Floyd Morrow. (M7-C500-D7)

Shively, Ky. DIXIE DR., Hwy. 60. Exec: Floyd Morrow. (M7-C870-D7)

Springfield, Ky. BELLE VISTA DR. Exec: Ball & Wheatley. (M7-C570-D7)

KANSAS CITY TERRITORY

Arkansas

Rogers, Ark. TWIN CITY DR., P. O. Box 135, Hwy. 17. Exec: Roy Stewart. (M9-C400-D7)

Springdale, Ark. 71 DR. Exec: Commonwealth Theatres Ct., Kansas City, Mo. (M7-C500-D7)

Sulphur Springs, Ark. BIG SOMBRERO DR. Exec: Mrs. J. B. Covertson. (M9-C300-D7)

Iowa

Muscatine, Ia. HILLTOP DR. Exec: Palisades Investment Co. (M7-C500-D7)

Kansas

Abilene, Kan. TRAILS END DR. Exec: H. F. Strowig & Sons. (M7-C310-D7)

Anthony, Kan. STAR-VUE DR. Exec: Mrs. Hazel Droz, Anthony, Kan. (M7-C300-D7)

Arkansas City, Kan. 166 DR. Exec: Fred Munson. (M7-C400-D7)

Atchison, Kan. FRONTIER DR. Exec: Charles Potter, 1102 E. 47th St., Kansas City, Mo. (M7-C300-D7)

Bronson, Kan. SHEPHERD OF THE HILLS DR. Exec: Cuba Plympton, B. K. Lippit. (M7-C100-D7)

Chanute, Kan. NEOSHO DR. Exec: Ray Walsh, Mainstreet Theatre. (M7-C360-D7)

Clay Center, Kan. SKY LINE DR. Exec: K. H. Ehret. (M9-C325-D7)

Coffeyville, Kan. TAL'S DR., Cline Rd. Exec: Tal Richardson, Box 136. (M9-C360-D7)

Colby, Kan. COLBY DR. Exec: Don Phillips, Colby Theatre. (M7-C250-D7)

Concordia, Kan. CONCORDIA DR. Exec: A. Schneiderman, 221 W. 18th St., Kansas City 8, Mo. (M7-C400-D7)

Dodge City, Kan. BOOT HILL DR. Exec: Glen A. Cooper. (M7-C400-D7)

Dodge City, Kan. DODGE CITY DR. Exec: Glen Cooper, 202 S. 2nd St. (M6-C300-D7)

Eldorado, Kan. STAR-VIEW DR. Exec: Ben Adams, Roxy Theatre. (M7-C360-D7)

Emporia, Kan. 50 SOUTH DR. Exec: William Flynn, Box 47, Great Bend. Kan. (M9-C500-D7)

Fort Scott, Kan. MO-KAN DR. Exec: Chet Borg. (M7-C300-D7)

Garden City, Kan. GARDEN CITY DR. Exec: Glen Cooper, 202 S. 2nd St., Dodge City. (M6-C300-D7)

Goodland, Kan. GOODLAND DR. Exec: Commonwealth Ths. Ct. (M9-C250-D7)

Great Bend, Kan. GREAT BEND DR. Exec: Mrs. Audrey Flynn, Box 47. (M7-C450-D7)

Hays, Kan. HAYS DR., P.O. Box 178. Exec: Glen Cooper, 202 S. 2nd St., Dodge City, Kan. (M7-C300-D7)

Hoisington, Kan. CHEYENNE DR. Exec: Jake Manweiler, Wayne Maupin and August Manweiler. (M9-C450-D7)

Hutchinson, Kan. AYR-VU DR. Exec: Jay Wooten. (M9-C350-D7)

Hutchinson, Kan. IRIS DR., R.F.D. #4. Exec: Carl Sproule. (M7-C400-D7)

Independence, Kan. SUNSET DR. Exec: Theatre Entr. and Wm. H. Wagner. (M7-C313-D7)

Iola, Kan. 54 DR., P. O. Box 263. Exec: Jack Hastings. (M7-9-C300-D7)

Junction City, Kan. MIDWAY DR. Exec: Warren Weber and Vic Harris. (M9-C500-D7)

Kansas City, Kan. BOULEVARD DR., 1899 Merian Blvd. Exec: Charles Potter, 1102 E. 47th St., Kansas City, Mo. (M7-C500-D7)

Kansas City, Kan. KANSAS DR., Stoney Point Rd. and Hwy. 40. Exec: Rube Finkelstein, 1701 N. 7th St., Kansas City, Kansas. (M7-C700-D7)

Larned, Kan. LARNED DR. Exec: Don Burnett, State Theatre. (M7-C220-D7)

Lawrence, Kan. LAWRENCE DR., P.O. Box 199. Exec: Commonwealth Theatres Ct. (M9-C400-D7)

Leavenworth, Kan. FORT DR., R.F.D. #4. Exec: Beverly Miller. (M9-C375-D7)

Leavenworth, Kan. SKYLARK DR. Exec: Durwood Theatre Ct. (M9-C450-D7)

Liberal, Kan. GREAT WESTERN DR. Exec: Jay Wooten, Liberal, Kansas. (M9-C400-D7)

Lyons, Kan. LYONS DRIVE IN, P.O. Box 341. Exec: Don Cuthbertson. (M9-C290-D7)

Manhattan, Kan. STAR-VU DR. Exec: Theatre Enterprises, 1703 Wyandotte, Kansas City, Mo. (M9-C500-D7)

Marysville, Kan. HILLTOP DR. Exec: Eddie Henderson. (M9-C250-D7)

McPherson, Kan. STAR VIEW DR., P.O. Box 592. Exec: V. C. Anderson, 1612 Grand Ave., Kansas City, Mo. (M9-C450-D7)

Newton, Kan. WEST-VUE DR. Exec: Ray Robertson. (M9-C350-D7)

Ottawa, Kan. HILLCREST DR., 1214 S. Hickory. Exec: Glen Underwood. (M9-C350-D7)

Parsons, Kan. PARSONS DR. Exec: Louis Stein, 1709 Belmont St. (M9-C500-D7)

Pittsburg, Kan. SIXTY-NINE DR. Exec: G. W. Dickinson, Mission, Kan. (M9-C500-D7)

Pratt, Kan. TRAIL DR. Exec: Sol Frank. (M9-C400-D7)

Russell, Kan. SKY VU DR., P.O. Box 575. Exec: J. O. Murray, W. A. Michaelis, Jr. (M9-C400-D7)

Salina, Kan. EIGHTY-ONE DR., R.F.D. #4. Exec. G. W. Dickinson, Mission. (M7-C500-D7)

Scott City, Kan. SCOTT CITY DR. Exec: F. H. Rodenbeck. (M9-C250-D7)

Shawnee, Kan. SHAWNEE DR. Exec: Glen Dickinson, Mission. (M9-C750-D7)

Topeka, Kan. COMMUNITY DR., 25th and California. Exec: Claude Parrish, Liberty, Mo. (M7-C500-D7)

Topeka, Kan. STARLITE DR., 5303 W. 21st. Exec: Claude Parrish, Liberty, Mo. (M9-C400-D7)

Ulysses, Kan. ULYSSES DR. Exec: C. V. Crocker, Crocker Theatre. (M7-C350-D7)

Wellington, Kan. CHISHOLM TRAIL DR. Exec: Sol Frank, F. E. Estes, Charles Gregg, J. L. Young. (M7-C420-D7)

Wichita, Kan. AIRPORT DR., 3100 S. Oliver. Exec: C. C. McCollister, Nomar Theatre. (M7-C650-D7)

Wichita, Kan. CREST DR. Exec: O. F. Sullivan, Civic Theatre. (M7-C500-D7)

Wichita, Kan. EIGHTY-ONE DR., 6250 N. Broadway. Exec: O. F. Sullivan, c/o Civic Th. (M7-C600-D7)

Wichita, Kan. FIFTY-FOUR DR., 6251 E. Kellogg. Exec: O. F. Sullivan, c/o Civic Th. (M7-C650-D7)

Wichita, Kan. MEADOWLARK DR. Exec: T. H. Slothower, 130 S. Belmont. (M-7-9-C900-D7)

Wichita, Kan. PAWNEE DR., 2400 S. Broadway. Exec: Al McClure, Pawnee Ths., Inc. (M9-C600-D7)

Wichita, Kan. SKY VIEW DR., P. O. Box 1542, 4308 Southwest Blvd. Exec: Foy-Sproule Amuse. (M9-C400-D7)

Winfield, Kan. WINFIELD DR. Exec: Fred Munson. (M7-C240-D7)

Missouri

Aurora, Mo. SUNSET DR. Exec: Ralph Hough, Jr., Box 302. (M7-C400-D7)

Camdenton, Mo. CAMDEN DR., Box 103. Exec: E. E. Hopkins. (M9-C300-D7)

Carthage, Mo. 66 DR. Exec: Bill Bradfield. (M9-C500-D7)

Carthage, Mo. SUNSET DR. Exec: Clyde Leeson. (M9-C300-D7)

Chillicothe, Mo. 65 DR. Exec: Merle Jones and Angelo Saccaro. (M7-C250-D7)

Excelsior Springs, Mo. SPA MOTOR MOVIE DR. Exec: Carl Koch. (M7-C300-D7)

Harrisonville, Mo. CASS COUNTY DR. Exec: Commonwealth Theatre Ct. (M7-9-C300-D7)

Hickman Mills, Mo. CREST DR. Exec: Commonwealth Theatres Ct. (M7-C1000-D7)

Independence, Mo. SUNSET DRIVE IN, P. O. Box 376, Hwys. 40 and 71. Exec: Phil Smith Ct., Boston, Mass. (M7-C400-D7)

Jefferson City, Mo. 50 HI WAY DR. Exec: Beverly Miller. (M9-C385-D7)

Jefferson City, Mo. SKYLARK DR. Exec: Durwood Theatres Ct. (M9-C450-D7)

Joplin, Mo. TRI STATES DR., P.O. Box 215. Exec: Commonwealth Theatres Ct. (M9-C583-D7)

Kansas City, Mo. 40 HI WAY DR. Exec: A. Berger. (M9-C750-D7)

Kirksville, Mo. SILVER STAR DR., 207 E. Pierce. Exec: C. D. Magnus. (M9-C250-D7)

Lamar, Mo. BARCO STARVUE DR. Exec: Arnold J. Simmons. (M7-C200-D7)

Lexington, Mo. STARLITE AIR DROME. Exec: Paul Neal, 405 S. 24th St. (M7-C100-D7)

Marshall, Mo. PARKSIDE DR. Exec: C. Thomas, Sweet Springs. (M9-C300-D7)

Maryville, Mo. DUDE RANCH DR. Exec: C. E. Cook. (M7-C360-D7)

Moberly, Mo. 63 DR. Exec: Elmer Bills. (M7-C300-D7)

Neosho, Mo. CARMAR DR. Exec: Harley Fryer, Carmar Theatre. (M7-C600-D7)

Nevada, Mo. NEVADA DR. Exec: Osborne and Ziegler. (M7-C350-D7)

Osage Beach, Mo. GRAND GLAIZE DR. Exec: V. L. Smith, 1612 Grand Ave., Kansas City. (M9-C250-D7)

Parkville, Mo. RIVERSIDE DR. Exec: Commonwealth Th. Ct. (M9-C1000-D7)

Richmond, Mo. HENRIETTA DR. Exec: Frank Weary, Farris Theatre. (M7-C400-D7)

Saint Joseph, Mo. BELT DR., Belt Hwy. Exec: C. E. Martin, Jr. (M9-C550-D7)

Saint Joseph, Mo. SKYLARK DR., Belt Hwy. and Faraon St. Exec: Durwood Theatres Ct. (M9-C600-D7)

Sedalia, Mo. 50 HIWAY DR., R.R. #3. Exec: Commonwealth Theatres Ct. (M9-C377-D7)

Springfield, Mo. SPRINGFIELD DR., 1943 E. Sunshine Ave. Exec: Commonwealth Amusement Corp. (M9-C350-D7)

Springfield, Mo. SUNSET DR. Exec: Commonwealth Amusement Corp. (M7-9-C525-D7)

LOS ANGELES TERRITORY

Arizona

Globe, Ariz. APACHE DR. Exec: O. K. Leonard. (M12-C300-D7)

Mesa, Ariz. PIONEER DR. Exec: Harry L. Nace Ct. (M12-C692-D7)

Phoenix, Ariz. CINEMA PARK DR., 5500 N. 7th St. Exec: Floyd Bernard. (M12-C880-D7)

Phoenix, Ariz. TWIN OPEN AIR DRIVE IN. Exec: Mike Parker. (M12-C1500-D7)

Phoenix, Ariz. INDIAN DR., Indian School Rd. and 27th Ave. Exec: Harry L. Nace Ct. (M12-C500-D7)

Phoenix, Ariz. PHOENIX DR., 3600 E. Van Buren. Exec: Harry L. Nace Ct. (M12-C400-D7)

Phoenix Ariz. SILVER DOLLAR DR. Exec: W. P. Wickersham. (M12-C* -D7)

Prescott, Ariz. SENATOR DRIVE IN, 804 Country Club Dr. Exec: J. W. Barton. (M12-C350-D7)

Safford, Ariz. SAFFORD DRIVE IN. Exec: Louis Long, Jones Enterprises. (M12-C350-D7)

Tucson, Ariz. BILTMORE MOTOR VU DR., 600 W. Kelso St. Exec: E. B. Pegram. M12-C600-D7)

Tucson, Ariz. MIDWAY DR., 4500 E. Speedway. Exec: Floyd Bernard. (M12-C680-D7)

Tucson, Ariz. RODEO DR., 201 E. Pennsylvania St. Exec: Rodeo Drive-In Theatre Corp. (M12-C600-D7)

Yuma, Ariz. MESA DR., 891 - 4th Ave. Exec: W. P. Wickersham. (M12-C340-D7)

California

Arcadia, Cal. EDWARDS DR., 4469 E. Live Oak. Exec: Edwards Theatres, 4907 N. Huntington Drive, Los Angeles 32. (M12-C750-D7)

Arlington, Cal. MAGNOLIA DR. Exec: Cooperative Ct. (M12-C350-D7)

Bakersfield, Cal. SOUTH CHESTER DR., S. Chester and Hwy. 99. Exec: Bakersfield Dr. Th. Corp. (M12-C470-D7)

Bakersfield, Cal. 99 DR., 4444 Pierce Rd. Exec: Lloyd Miller. (M12-C636-D7)

Bakersfield, Cal. TERRACE DR., 300 Terrace Way. Exec: Earle Johnson. (M12-C650-D7)

Banning, Cal. CHERRY PASS DR. Exec: Beau-Ban Enterprises. (M12-C500-D7)

THIS HUGE CROWD OF 71 ADULTS AND CHILDREN appeared at the Skylark Drive-In, Leavenworth, Kans., in one truck when the theatre admitted all occupants of a vehicle for a single flat charge.

Bell Gardens, Cal. GAGE DR., 6805 E. Gage. Exec: Cal-Pac Drive-In Theatres, Inc., 143 S. Robertson, Los Angeles. (M12-C600-D7)

Bostonia, Cal. AERO DR. Exec: D. L. Johnson. (M12-C570-D3)

Burbank, Cal. PICKWICK DR., 1100 Alameda Ave. Exec: Cal-Pac Drive-In Theatres, Inc. (M12-C800-D7)

Burbank, Cal. SAN VAL DR., 2720 Winona Ave. Exec: Cal-Pac Drive-In Theatres, Inc. (M12-C590-D7)

Cathedral City, Cal. SUN AIR DR. Exec: Ben Bronstein and Manny Hoffman. (M12-C500-D7)

Chula Vista, Cal. HARBOR DR., National Ave. (Hwy. 101). Exec: T. P. Huntington. (M12-C500-D7)

Compton, Cal. COMPTON DR., 2111 E. Rosecrans Blvd. Exec: Pacific Drive-In Ths. (M12-C1000-D7)

Cypress, Cal. CINA CAR DR., 6612 Lincoln Blvd. Exec: Montgomery Bros. (M7-C375-D7)

El Centro, Cal. EL RANCHO DR., Hwy. 80. Exec: R. C. Jones. (M12-C400-D7)

El Monte, Cal. EL MONTE DR., Lower Azusa Rd. at Ellis Lane, P. O. Box 449. Exec: Cal-Pac Drive-In Theatres, Inc. (M12-C874-D7)

El Monte, Cal. STARLIGHT DR. Exec: Ford Bratcher. (M12-C850-D7)

Escondido, Cal. ESCONDIDO DR. Exec: Dan Johnson and Sidney Coffman. (M12-C325-D7)

Gardena, Cal. ROADIUM DR., 2500 Redondo Beach Blvd. Exec: L. Dale Castigen. (M12-C480-D7)

Gardena, Cal. VERMONT DR., 182nd and Vermont, P. O. Box 466. Exec: Cal-Pac Drive-In Theatres, Inc. (M12-C769-D7)

Hemet, Cal. HEMACINTO DR. Exec: Jerry Davis and L. W. Bush. (M12-C400-D7)

Highland, Cal. BASELINE DR., 1785 Baseline. Exec: Harry Dickerman. (M12-C750-D7)

Imperial, Cal. MOTOR VU DR., P.O. Box 117. Exec: Motor Vu Theatre Co. (M12-C500-D7)

Inglewood, Cal. CENTURY DR., 3560 W. Century Blvd. Exec: Cal-Pac Drive-In Theatres, Inc. (M12-C980-D7)

Lamont, Cal. SOUTH LAMONT DR. Exec: Karr & Kendic. (M12-C450-D7)

Lemon Grove, Cal. CINEMA DINE DR., P. O. Box 85, Cor. Federal Blvd. and Central Ave. Exec: Suburban Theatres, Inc. (M12-C612-D7)

Lenwood, Cal. BAR-LEN DR. Exec: P. K. Lyons. (M12-C400-D7)

Loma Linda, Cal. TRI-CITY DR., Hwy. 99 at Richardson St., R. 1, Box 480. Exec: Cal-Pac Drive-In Theatres, Inc. (M12-C724-D7)

Long Beach, Cal. LAKEWOOD DR., 2100 E. Carson St. Exec: Cal-Pac Drive-In Theatres, Inc. (M12-C950-D7)

Los Angeles, Cal. CENTENILA DR. Exec: Aladdin Dr. Th., Inc. (M12-C820-D7)

Los Angeles, Cal. FLORAL DR. Exec: Aladdin Dr. Th., Inc. (M12-C800-D7)

Los Angeles, Cal. GILMORE DR., Third St. and Fairfax Blvd. Exec: Sero Enterprises. (M12-C650-D7)

Los Angeles, Cal. LOS FELIZ DR., Hyperion Ave. and Riverside Drive. Exec: James Finkler. (M12-C500-D7)

Los Angeles, Cal. OLYMPIC DR., 12109 W. Olympic Blvd. Exec: Cal-Pac Drive-In Theatres, Inc. (M12-C775-D7)

Los Angeles, Cal. STUDIO DR., 5250 Sepulveda Blvd. Exec: LeVere Company. (M12-C700-D7)

Los Angeles, Cal. TWIN VU DR., 15201 S. Figueroa. Exec: Clint Glenny Associates. (M12-C550-D7)

Monrovia, Cal. BIG SKY DR., 1044 E. Huntington Drive. Exec: Lou Berman. (M12-C650-D7)

N. Hollywood, Cal. VICTORY DR., 13037 Victory Blvd. Exec: Sero Enterprises. (M12-C650-D7)

Oceanside, Cal. MIDWAY DR., Fall Brook Rd. Exec: Midway Enterprises, Floyd Bernard. (M12-C500-D7)

Ontario, Cal. VALLEY DR., Valley Blvd. Exec: Sero Enterprises. (M12-C640-D7)

Orange, Cal. ORANGE DR., Hwy. 101 and Placentia. Exec: Cal-Pac Drive-In Theatres, Inc. (M12-C788-D7)

Palm Springs, Cal. AIRER DR. Exec: Ernest M. Umann. (M12-C400-D7)

Paramount, Cal. ROADIUM DR. Exec: L. D. Castigen. (M12-C500-D7)

Pasadena, Cal. HASTINGS DR., Foothill and Rosemead. Exec: Vinnicof Theatre Ct. (M12-C1000-D7)

Pico, Cal. WHITTIER DR., 8462 E. Whittier Blvd. Exec: Cal-Pac Drive-In Theatres, Inc. (M12-C600-D7)

Reseda, Cal. RESEDA DR., Reseda and Vanowen. Exec: Cal-Pac Drive-In Theatres, Inc. (M12-C740-D7)

Rialto, Cal. FOOTHILL AUTO TH., 655 E. Foothill Blvd. Exec: L. C. Tharpe. (M12-C750-D7)

Riverside, Cal. RUBIDOUX DR., Opal and Mission Blvds. Exec: R. C. Hunt. (M12-C738-D7)

San Bernardino, Cal. MOUNT VERNON MOTOR IN, 632 Mt. Vermon. Exec: Seth Perkins. (M12-C600-D7)

San Diego, Cal. CAMPUS DR., 6147 El Cajon Blvd. Exec: Sam J. Russo. (M12-C600-D7)

San Diego, Cal. MIDWAY DR., 3901 Midway Drive. Exec: Midway Enterprises. (M12-C425-D7)

San Diego, Cal. RANCHO DR., Federal Blvd. and Euclid, P. O. Box 728. Exec: Sero Enterprises. (M12-C615-D7)

San Luis Obispo, Cal. SUNSET DR. Exec: Don McLarren and C. A. Pasquini. (M12-C500-D7)

San Pedro, Cal. SAN PEDRO DR., 1575 N. Gaffey. Exec: Cal-Pac Drive-In Theatres, Inc. (M12-C900-D7)

Santa Ana, Cal. PAULO DR., 14361 Paularino. Exec: Ward Th. Ent., Inc. (M12-C800-D7)

Santa Barbara, Cal. CALIFORNIA DR. Exec: Sherrill Corwin. (M12-C910-D7)

Santa Maria, Cal. PARK-AIRE TH., East on Whitney, P. O. Box 186. Exec: Victor S. Goss. M12-C500-D7)

Santa Paula, Cal. SANTA PAULA DR., 224 S. Barkla. Exec: Hickey Bros. Land Co. (M12-C450-D7)

South Gate, Cal. SOUTHGATE DR., Firestone Blvd. and Atlantic. Exec: Aladdin Dr. Th., Inc. (M12-C850-D7)

Sunland, Cal. SUNLAND DR. Exec: Vinnicoff Th. Ct. (M12-C550-D7)

Taft, Cal. SUNSET DR., P.O. Box 426. Exec: Scott Th. Co. (M12-C628-D7)

Torrance, Cal. HARBOR DR., 23444 S. Vermont Ave. Exec: Thrifty Drive-In Ths., 1522 W. 7th St., Los Angeles 14, Calif. (M12-C600-D7)

Van Nuys, Cal. VAN NUYS DR., 15040 Roscoe Blvd. Exec: Cal-Pac Drive-In Theatres, Inc. (M12-C891-D7)

Ventura, Cal. 101 DR., Hwy. 101. Exec: Reeves Espy. (M12-C777-D7)

Nevada

Las Vegas, Nev. MOTOR VU DR., P.O. Box 1791. Exec: Howard D. Cahoon. (M8-C566-D7)

MEMPHIS TERRITORY

Arkansas

Arkadelphia, Ark. SKYVUE DR. Exec: Robb and Rowley, Inc. (M8-C350-D7)

Batesville, Ark. WHITE RIVER DR. Exec: Commonwealth Theatre Ct. (M8-C* -D7)

Benton, Ark. BIG FOUR DR., P. O. Box 49. Exec: H. T. Crawford. (M9-C400-D7)

Conway, Ark. 64 DR. Exec:* (M8-C* -D7)

DeQueen, Ark. CAMDEN DR., P.O. Box 5801. Exec: Carrolton Allman. (M9-C400-D7)

El Dorado, Ark. #7 DRIVE IN, P. O. Box 1504. Exec: Busby-Jones Ct. (M8-C450-D7)

Fayetteville, Ark. 71 DR., P.O. Box 56, University Station. Exec: Commonwealth Th. Ct. (M9-C400-D7)

Forrest City, Ark. SKYWAY DR. Exec: Montgomery and Priddy. (M10-C450-D7)

Fort Smith, Ark. SEVENTY-ONE DR., Jenny Lind Rd., P. O. Box 3, Sta. A. 71. Exec: W. Spicer. (M8-C290-D7)

Forth Smith, Ark. SKYVUE DR. Exec: J. F. Brown. (M8-C400-D7)

Fort Smith, Ark. TWENTY-TWO DR., Hwy. 22, P. O. Box 217. Exec: Carl Burton. (M7-C600-D7)

Harrison, Ark. OZARK DR. Exec: Commonwealth Amusement Co. (M8-C250-D7)

Hot Springs, Ark. 70 DR., Little Rock Hwy. Exec: James Taylor. (M10-C400-D7)

Hot Springs, Ark. WHEATLEY DR., Golf Links Rd. Exec: H. E. Wheatley. (M6-C200-D7)

Jonesboro, Ark. SKYVUE DR., 1304 S. Main St. Exec: Robert Lowry. (M10-C300-D7)

Little Rock, Ark. ASHER DR., Asher Ave., Hwy. 70. Exec: Robb and Rowley-United Ct. (M9-C650-D7)

Magnolia, Ark. JOY DR. (Closed). Exec: Joy N. Houck, Joy Theatres Ct. (M9-C300-D7)

Magnolia, Ark. SUNSET DR. Exec: Robb and Rowley-United Ct. (M8-C400-D7)

Marked Tree, Ark. POINSETT DR. Exec: Bob Bradley and Paul Shafer. (M8-C400-D7)

Mena, Ark. MENA DR. Exec: Cowden and Longacre. (M8-C220-D7)

Newport, Ark. SKYLARK DR. Exec: Dr. C. P. Gray. (M8-C300-D7)

North Little Rock, Ark. DRIVE IN, Hwy. 70. Exec: Malco Th. Ct. (M7-C500-D7)

Paragould, Ark. SUNSET DR. Exec: Orris Collins. (M8-C560-D7)

Pine Bluff, Ark. PINES DR. Exec: Bonner and Stringer. (M8-C600-D7)

Pine Bluff, Ark. DRIVE IN MOVIES, Hwy. 65. Exec: C. F. Bonner. (M7-C250-D7)

Pocahontas, Ark. SKYLARK DR. Exec: Burris and Henley Smith. (M8-C450-D7)

Prescott, Ark. PRESCOTT DR. Exec: C. R. Gray and Eugene Hale. (M8-C300-D7)

Russelville, Ark. 64 DR. Exec: W. L. Spicer. (M10-C330-D7)

Searcy, Ark. 64 DR. Exec: Commonwealth Amusement Co. (M8-C450-D7)

West Helena, Ark. 4th STREET DR. Exec: Ed Blair. (M10-C300-D7)

West Memphis, Ark. SUNSET DR. Exec: Ken Corp. (M8-C600-D7)

Kentucky

Benton, Ky. KENTUCKY LAKE DR. Exec: C. W. Lyles. (M9-C300-D7)

Elizabethtown, Ky. STARLITE DR. Exec: Bob Enoch. (M8-C400-D7)

Grenada, Ky. WHITEHAVEN DR. Exec: E. H. White. (M9-C350-D7)

Henderson, Ky. AUDOBON DR. Exec: Malco Th. Ct. (M8-C500-D7)

Henderson, Ky. HI-Y DR. Exec: J. A. Laplante. (M8-C300-D7)

Mayfield, Ky. 45 DR. Exec: Ned Greene, Legion Theatre Co. (M8-C300-D7)

Ownesboro, Ky. STARLIGHT DR., Calhoun Rd. Exec: Andy Anderson. (M8-C400-D7)

Owensboro, Ky. PARKWAY DR. Exec: C. E. Blincoe. (M8-C100-D7)

Princeton, Ky. SKYWAY DR. Exec: Vernon Waible. (M8-C300-D7)

Mississippi

Clarksdale, Miss. SKYLARK DR. Exec: Henley Smith and Clark Shivley. (M9-C450-D7)

Cleveland, Miss. CHIEF DR. Exec: C. J. Collier and B. F. Jackson. (M9-C550-D7)

Columbus, Miss. STATE DR. Exec: R. B. Dossett. (M9-C300-D7)

Corinth, Miss. SKYLARK DR. Exec: Frank Simmons, Jr. (M9-C550-D7)

Kosciusko, Miss. STARLITE DR., P. O. Box 350. Exec: Louis, Geo. L. and Charles W. Lackey. (M9-C350-D7)

Tupelo, Miss. 78 DR. Exec: J. M. Miller. (M9-C500-D7)

Missouri

Hayti, Mo. 61 DR. Exec: John Mohrstadt. (M9-C425-D7)

Tennessee

Dickson, Tenn. BROADWAY DR. Exec: J. C. Brown, Jr. (M9-C240-D7)

Dyersburg, Tenn. FUN-LAND DR. Exec: M. E. Rice, Brownsville, Tenn. (M9-C525-D7)

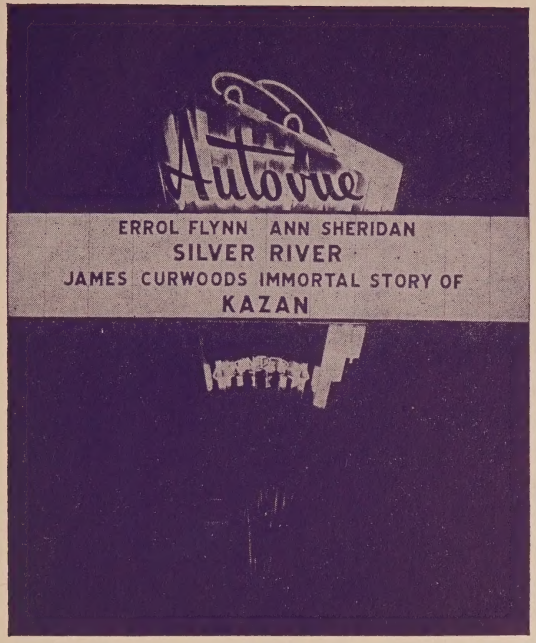
Frayser, Tenn. DRIVE IN. Exec: Amelia Ellis & Assoc. (M9-C500-D7)

Humboldt, Tenn. SKYWAY DRIVE IN. Exec: Chickasaw Amuse. Co. (M9-C300-D7)

Jackson, Tenn. DRIVE IN, Hwy. 45. Exec: Malco Th. Ct. (M7-C166-D7)

Jackson, Tenn. JACKSON DR. Exec: Douglas Pierce. (M-10-C500-D7)

Jackson, Tenn. RANCHO DR. Exec: R. Wilson. (M9-C500-D7)



AN UNUSUAL ASSOCIATION of theatre name sign and attraction board by Wagner has been developed for the Auto-Vue Drive-In, Spokane, Wash.

AN INTRIGUING DESIGN in attraction panels is shown in the Wagner Master Multiple 41" board set up at the Compton Drive-In, Compton, Calif.

Martin, Tenn. SUNSET DR. Exec: W. F. Ruffin Th. (M9-C* -D7)

Memphis, Tenn. BELLEVUE DR. Exec: Kemmons Wilson and Assoc. (M10-C750-D7)

Memphis, Tenn. LAMAR DR., 89 Beale St. Exec: Malco Th. Ct. (M10-C500-D7)

Memphis, Tenn. SKYVUE DR., 2855 Park Ave. Exec: Harold Roth, 944 Sterick Bldg. (M10-C750-D7)

Memphis, Tenn. SUMMER DR., 5150 Summer Ave. Exec: Kemmons Wilson and Louis Weaver. (M10-C670-D7)

Paris, Tenn. SUNDOWN DR. Exec: I. W. Boden. (M9-C200-D7)

Union City, Tenn. STAR LIFE DR. Exec: A. B. Garrett. (M9-C* -D7)

Waverly, Tenn. LAKE DR. Exec: Nathan Flexer. (M9-C316-D7)

MILWAUKEE TERRITORY

Michigan

Ishpeming, Mich. EVERGREEN DR. Exec: Evergreen Enterprises. (M7-C350-D7)

Rapid River, Mich. B & D DR. Exec: Frank Chivers. (M7-C450-D7)

Wisconsin

Baileys Harbor, Wis. SKYWAY DR. Exec:* (M7-C210-D7)

Butler, Wis. VICTORY DR. Exec: Delft Th., Inc. (M7-C1000-D7)

Delavan, Wis. LAKES DR. Exec: J. Sikes and R. Lawler. (M7-C600-D7)

Elm Grove, Wis. DRIVE IN, Bluemound Rd., P.O. Box 285. Exec: Phil Smith Ct., Boston, Mass. (M7-C1000-D7)

Fond Du Lac, Wis. LAKE PARK DR., 51 W. Scott. Exec: Standard Ct. (M6-C510-D7)

Franklin, Wis. TWIN 41 OUTDOOR TH., Hwy. 41. Exec: L. F. Gran, Standard Theatres Ct., Milwaukee 3, Wis. (M7-C2000-D7)

Fredonia, Wis. AIRPORT DR. Exec:* (M7-C* -D7)

Genoa City, Wis. HI-WAY DR., Highway 73. Exec:* (M7-C* -D7)

Green Bay, Wis. STARLIGHT DR., Cass near Beckers Corners. Exec: S. A. Karatz, Badger Outdoor Thea. Ct. (M7-C600-D7)

Janesville, Wis. 26 OUTDR. Hwy. 26. Exec: S. A. Karatz, Badger Outdoor Thea. Ct. (M7-C450-D7)

Kenosha, Wis. KENO-FAMILY DR., Hwy. 42, Jct. T. Exec: C. J. Pappas. (M7-C800-D7)

Madison, Wis. BADGER OUTDOOR TH., Rt. 1. Exec: Ralph Green, J & M Enterprises, Inc. (M7-C650-D7)

Manitowoc, Wis. LAKEVIEW DR. Exec: Roger Reinert, Algoma, Wis. (M7-C400-D7)

Marinette, Wis. 64 OUTDOOR TH. Exec: S. A. Karatz, Badger Outdoor Thea. Ct. (M7-C400-D7)

Neenah, Wis. 41 OUTDOOR TH., P. O. Box 10. Exec: S & M Theatres Ct. (M7-C500-D7)

Oshkosh, Wis. 44 OUTDOOR TH. Exec: S & M Theatres Ct. (M7-C500-D7)

Racine, Wis. MID CITY OUTDOOR TH., Hwy. 42. Exec: L. F. Gran, Standard Theatres Ct., Milwaukee. (M7-C859-D7 plus 500 seats)

Schofield, Wis. HIGHWAY 29 DR. Exec: Marathon Outdr. Th. Co. (M7-C500-D7)

Sheboygan, Wis. STARDUSK DR. Exec: Ted Gamble. (M7-C450-D7)

Sommers, Wis. MIDCITY DR. Exec: Ted Gamble. (M7-C765-D7)

Stevens Point, Wis. 51 OUTDOOR DR., Hwy. 51, 407 Division St. Exec: S. A. Karatz, Badger Outdoor Theatre Ct. (M7-C450-D7)

Stevens Point, Wis. PARK DR., Rt. 1, Box 65. Exec: C. McLerky. (M7-C450-D7)

Sturtevant, Wis. RACINE OUTDOOR TH., Box 222. Exec: Ralph Green, J & M Enterprises, Inc. (M7-C650-D7)

Wausau, Wis. MARATHON OUTDOOR TH., Hwy. 29. Exec: Sig Goldberg. (M7-C500-D7)

Weyauwega, Wis. DRIVE IN. Exec: Albert Behm, Jr. (M7-C200-D7)

MINNEAPOLIS TERRITORY

Minnesota

Albert Lea, Minn. STARLIGHT DR. Exec: Ben Friedman, Lea Amuse. Co. (M5-C300-D7)

Austin, Minn. AUSTIN DR., 304 S. St. Paul. Exec: Ruben & Fields. (M5-C475-D7)

Backus, Minn. MARLOW'S MOBIL-IN TH. (Portable). Exec: John Rohr, Pine River. (M5-C* -D2)

Brainerd, Minn. GULL DR. Exec: Frank Manske. (M5-C400-D7)

Crosslake, Minn. MARLOW'S MOBIL-IN TH. (Portable). Exec: John Rohr, Pine River. (M5-C* D2)

Duluth, Minn. SKYLINE DR., Hwy. 53. Exec: Ted Mann, Rubenstein and Mann. (M5-C600-D7)

Fairmont, Minn. FAMILY DR. Exec: Nash-Waters Th. (M5-C500-D7)

Little Falls, Minn. AIRPORT DR. Exec: Lowell B. Smoots. (M5-C465-D7)

Longville, Minn. MARLOW'S MOBIL-IN TH. (Portable). Exec: John Rohr, Pine River. (M5-C* -D2)

Mankato, Minn. KATO DR., Route 4. Exec: Pete Karalis, Triangle Thea. Ct., 2408 Byrd Ave., N. Minneapolis. (M5-C380-D7)

Marshall, Minn. STARLITE DR. Exec: Ray Hiller. (M5-C300-D7)

Minneapolis, Minn. BLOOMINGTON DR., 78th St. btw. Portland and Cedar Sts. Exec: United Outdr. Th. (M6-C650-D7)

Minneapolis, Minn. HY-7 DR., Hwy. 7. Exec: Sterling P. Jones. (M6-C750-D7)

Minneapolis, Minn. HILLTOP DR., 4711 Central Ave. N.E. Exec: Ed Sullivan. (M6-C500-D7)

Minneapolis, Minn. 100 TWIN DR. Exec: Al Alved. (M5-C638-D7)

Osseo, Minn. STARLITE DR. Exec: Minneapolis Entertainment Enterprises, Inc. (M5-C650-D7)

Owatonna, Minn. HI-WAY 65 DR., Hwy. 65. Exec: Frank and Woempner. (M5-C350-D7)

Pipestone, Minn. SUNSET DR. Exec: Al Lee, United Theatres. (M5-C381-D7)

Redwood Falls, Minn. 71 DR. Exec: Buckley and Buckley. (M5-C450-D7)

Rochester, Minn. OUTDOOR TH., Hwys. 14 and 52. Exec: Ralph Green, North State Enterprises, Inc. (M6-C550-D7)

Rochester, Minn. ROCHESTER DR. Exec: Stanley B. Berg. (M5-C550-D7)

Saint Cloud, Minn. CLOUD DR. Exec: Pete Karalis, Triangle Theatres St., 2408 Byrd Ave., N., Minneapolis. (M5-C388-D7)

Saint Paul, Minn. MINNEHAHA DR. Exec: Minnehaha Dr., Inc. (M5-C* -D7)

Saint Paul, Minn. ROSE DR., North Snelling and Rd. C. Exec: Minneapolis Entertainment Enterprises, Inc. (M6-C600-D7)

South Saint Paul, Minn. CORRAL DR. Exec: Minneapolis Entertainment Enterprises, Inc. (M5-C650-D7)

Spring Valley, Minn. DRIVE IN. Exec: J. Milnar. (M5-C250-D7)

Winona, Minn. SKY VU DR., Minn. City Rd. Exec: A. L. Smith. (M5-C400-D7)

Worthington, Minn. GAY DR. Exec: Harry Hower and Son. (M5-C412-D7)

North Dakota

Bismarck, N. D. CORRAL DR. Exec: Antone Schultz. (M5-C500-D7)

Dickinson, N. D. HILLCREST DRIVE IN. Exec: Frank Hallowell and Assoc. (M5-C350-D7)

Fargo, N. D. STARLITE DR., 1900 13th St., N. Exec: E. Rubin and J. Floyd. (M5-C400-D7)

Grand Forks, N. D. STARLIGHT DRIVE IN. Exec: Eddie Ruben and Joe Floyd. (M5-C500-D7)

Jamestown, N. D. LAKE ROAD DR. Exec: L. J. Ludwig. (M5-C500-D7)

Minot, N. D. MINOT DR. Exec: Pete Karalis, Triangle Thea. Ct., Minneapolis. (M5-C380-D7)

Williston, N. D. VALLEY DR. Exec: Arthur Kuhlman and Virgil Gould. (M5-C400-D7)

South Dakota

Aberdeen, S. D. STARLITE DR. Exec: Joe Floyd. (M5-C375-D7)

Huron, S. D. STARLITE DR. Exec: E. Rubin and J. Floyd. (M5-C400-D7)

Madison, S. D. MADISON DR. Exec: Gil Sessler and Duane Becker. (M5-C300-D7)

Mitchell, S. D. LAKEVIEW DR., P.O. Box 913. Exec: Pete Karalis, Triangle Th. Ct. (M5-C375-D7)

Sioux Falls, S. D. EAST PARK DR., Hwy. 38. Exec: Mantzke Ct. (M6-C325-D7)

Sioux Falls, S. D. SOO-DELL DR., Hwy. 77. Exec: Ed Paul. (M6-C200-D7)

Sioux Falls, S. D. STARLITE DR., 1825 Northwest. Exec: E. Rubin and J. Floyd. (M6-C500-D7)

Watertown, S. D. EAST PARK DR., P. O. Box 133. Exec: H. E. Hanson. (M5-C360-D7)

Wisconsin

Eau Claire, Wis. STARDUSK DR. Exec: Karatz, Grengs & Bolnick Outdoor Theatre Co. (M5-C500-D7)

La Crosse, Wis. STARLITE DR. Exec: S & M Theatres Ct. (M5-C420-D7)

Superior, Wis. STARDUSK DR. Exec: Sheldon Grengs. (M5-C785-D7)

NEW HAVEN TERRITORY

Connecticut

Burrville, Conn. BURR DR. Exec: Burr Drive In Corp. (M7-C400-D7)

Caanan, Conn. CAANAN DR. Exec: Arthur Howard. (M7-C500-D7)

Danbury, Conn. DANBURY DR., P. O. Box 590. Exec: Lockwood and Gordon Ct., Boston, Mass. (M7-C431-D7)

East Haven, Conn. POST DR., Rt. 5. Exec: Philip Cahill. (M7-C712-D7)

East Windsor, Conn. EAST WINDSOR DR., Ellington Rd., Box 33. Exec: Kupchunos Bros. (M7-C650-D7)

Milford, Conn. MILFORD DR., Rt. 1. Exec: E. M. Loew Ct., Boston, Mass. (M7-C500-D7)

Newington, Conn. E. M. LOEW'S DR., Rt. 5. Exec: E. M. Loew Ct., Boston, Mass. (M7-C500-D7)

Newington, Conn. PIKE DR., Rt. 5. Exec: Joseph Dolgin. (M7-C350-D7)

North Haven, Conn. NEW HAVEN DR., Rt. 5. Exec: David Willig. (M6-C716-D7)

Norwalk, Conn. DRIVE IN. Exec: Daniel Deering. (M7-C587-D7)

Torrington, Conn. TORRINGTON DR. Exec: Lockwood, Gordon and Rosen. (M7-C500-D7)

Uncasville, Conn. NEW LONDON-NORWICH DR. Exec: E. M. Loew Ct. (M7-C500-D7)

Waterbury, Conn. LAKE DR. Exec: Airdrome Amusement Corp. (M7-C486-D7)

Waterbury, Conn. PINE DR., P.O. Box 3007. Exec: J. Dolgin, F. M. McSweeney, Jr. (M7-C1000-D7)

Waterford, Conn. WATERFORD DR., P.O. RFD 2, Clark Lane, New London. Exec: Joe Gloth. (M7-C450-D7)

Winsted, Conn. PEOPLE'S DR. Exec: Vincent Youmatz. (M7-C300-D7)

NEW ORLEANS TERRITORY

Alabama

Andalusia, Ala. FENDLEY DR. Exec: Martin Th. (M12-C300-D6)

Andalusia, Ala. SKY VU DR. Exec: J. W. Bowers and F. C. Cotton. (M12-C226-D6)

Atmore, Ala. PALM DR. Exec: Martin Theatres Ct., Columbus, Ga. (M12-C300-D7)

Brewton, Ala, EAGLE DR. Exec: Martin Th. (M12-C300-D7)

Greenville, Ala. CAMELIA DR. Exec: Martin Th. (M12-C300-D7)

Mobile, Ala. AUTO SHO DR. Exec: Giddens and Rester. (M12-C900-D7)

Mobile, Ala. BAMA DR., Hwy. 90. Exec: L. C. Montgomery. (M12-C500-D7 plus 425 seats)

Mobile, Ala. DO DR., 51 Dauphin St. Exec: Edw. J. Fessler. M8-C350-D7)

Monroeville, Ala. HUB DR. Exec: F. T. McLendon. (M12-C270-D7)

Prichard (Mobile), Ala. DRIVE IN, Hwy. 45. Exec: Paramount Gulf Thea. Ct. (M12-C500-D7)

Robertsdale, Ala. HUB DR. Exec: McLendon Theatres. (M12-C400-D7)

Sanford, Ala. MIDWAY DR. Exec: J. E. Etheridge, W. Jackson and J. Dee. (M12-C200-D7)

Florida

Crestview, Fla. DIXIE DR., P. O. Box 36. Exec: Neal Robinson. (M12-C400-D7)

Century, Fla. ESCAMBIA DR. Exec: Paul Wood. (M12-C200-D7)

Niceville, Fla. BAY DR. Exec: Jas. Tringas. (M12-C150-D7)

Panama City, Fla. DAVIS DR. Exec: Bud Davis. (M12-C350-D7)

Pensacola, Fla. DRIVE IN, Hwy. 90. Exec: Paramount Gulf Theatres Ct. (M12-C400-D7)

Pensacola, Fla. PALAFOX DR. Exec: L. C. Montgomery. (M12-C400-D7)

Shalimar, Fla. FLORIDA DRIVE IN. Exec: James Tringas, Fort Walton, Fla. (M12-C300-D7 plus 200 seats)

Warrington, Fla. WARRINGTON DR. Exec: C. E. Stuart. (M12-C500-D7)

Louisiana

Abbeville, La. LA FITTE DR. Exec: F & R Th. Enterpr. (M12-C* -D7)

Alexandria, La. FOX DR., Huey Long Circle and MacArthur Dr. Exec: Billy Fox Johnson. (M12-C480-D7)

Alexandra, La. JOY DR., P.O. Box 4054, Hwy. 71. Exec: Joy N. Hock, Joy Theatres Ct. (M12-C500-D7)

Algiers, La. ALGIERS DR. Exec: Fred McLendon, Max Connet, Edward Jenner, William Shiell. (M12-C600-D7)

Amite, La. MIXON DR. Exec: Neil Mixon. (M9-C250-D7)

Arabi, La. SAINT BERNARD DR., P.O. Box 55, Saint Bernard's Hwy. Exec: George E. Wiltse. (M12-C396-D7)

Bastrop, La. ROSE DR. Exec: H. G. Parker. (M12-C400-D7)

Baton Rouge, La. DRIVE IN, P.O. Box 1904. Exec: Paramount Gulf Thea. Ct. (M12-C500-D7)

Baton Rouge, La. TIGER DR., By-Pass Hwy. 71, 6417 Airline Hwy. Exec: L. C. Montgomery. (M12-C600-D7)

Berwick, La. SAINT MARY DR., Hwy. 90. Exec: W. A. Lighter, Southeastern Theatres Ct. (M12-C350-D7)

Bogalusa, La. CITY DR. Exec: Nick Lamantia. (M12-C400-D7)

Bogalusa, La. JACK DR. Exec: Jack Minckler. (M12-C515-D7)

Crowley, La. TRAIL DR., Exec: A. J. Broussard. (M12-C325-D7)

Donaldsonville, La. BAYOU DRIVE IN. Exec: Lewis H. Cox. (M12-C300-D7)

Hammond, La. MITCHELL DR. Exec: J. T. Mitchell, P. O. Box 85. (M12-C300-D7)

Houma, La. DRIVE IN. Exec: Th. Serv. (M12-C320-D7)

Jefferson, La. MOVIES DR., 4100 Jefferson Hwy. Exec: B. Wollner, M. A. Lightman Ct. (M12-C450-D7)

Lafayette, La. HUB DR., Scott Rd. Exec: Fred T. McLendon Theatre Ct. (M12-C400-D7)

Lafayette, La. LAFAYETTE DR., P.O. Box 182. Exec: Louis Michot. (M12-C300-D7)

Lake Charles, La. MIDWAY DR. Exec: E. C. Jenner. (M12-C550-D7)

Lake Charles, La. ROUND UP DR. Exec: Southern Amuse. Ct. (M12-C500-D7 plus 125 seats)

Marrero, La. DRIVE IN, P. O. Box 143. Exec: Shiell and Connett. (M12-C400-D7)

Minden, La. HANDS DR., Hwy. 80. Exec: H. B. Hands. (M12-C500-D7)

Monroe, La. JOY DR., 770 DeSiard. Exec: Joy Th. (M12-C280-D7)

Natchitoches, La. CHIEF DR., P.O. Box 77. Exec: W. B. Younger. (M12-C300-D7)

New Iberia, La. ECHO DR. Exec: Jack O'Quinn. (M12-C450-D7)

New Iberia, La. IBERIA DR., Hwy. 26. Exec: T. Warren Michot. (M12-C250-D7)

New Orleans, La. AIRLINE DR., 4100 Airline Hwy. Exec: Woolner Brothers. (M12-C800-D7)

New Orleans, La. CRESCENT DR. Exec: Laten, Inc. (M12-C300-D7)

New Orleans, La. SKYVUE DR. Exec: Mortimer & Shiell. (M12-C800-D7)

Opelousas, La. YAM DR. Exec: E. R. Sellers, L. D. Guidry. (M12-C500-D7)

Opelousas, La. MIDWAY DR. Exec: Dudley Briley. (M12-C325-D7)

Ponchatoula, La. CAVE TANGI DR., Hwy. 51. Exec: Dallas Woods. (M10-C300-D7)

Ruston, La. RUSTON DR. Exec: William Butterfield. (M12-C414-D7)

Shreveport, La. BARKSDALE DR. Exec: Bullard & Lutzer. (M12-C400-D7)

Shreveport, La. DRIVE IN, Rt. 5, Box 321F. Exec: Joy N. Houck, Joy Theatres Ct. (M10-C400-D7)

Shreveport, La. JOY DR., Greenwood Rd. and Hwy. 80. Exec: Joy N. Houck, Joy Theatres Ct. (M12-C500-D7)

Shreveport, La. KINGS DR., E. Kings Hwy. Exec: B. D. Doak. (M12-C600-D7)

West Monroe, La. STAR DR. Exec: H. G. Prophit. (M12-C300-D7)

Winnsboro, La. LION DR. Exec: W. N. Clark. (M12-C325-D7)

Mississippi

Bay Saint Louis, Miss. HI-WAY DRIVE IN. Exec: Norman Benigno. (M12-C550-D7)

Biloxi, Miss. BEACH DR. Exec: E. V. Landaiche. (M12-C650-D7)

Biloxi, Miss. GULF COAST DR., Pass Rd. Exec: M. A. Ripps and E. I. Fessler. (M12-C300-D7)

Brookhaven, Miss. 51 DR. Exec: A. L. Carruth, Brookhaven Amusement Co., Woolworth Bldg. (M12-C300-D6)

Columbia, Miss. DIXIE DR. Exec: Frank W. Corvett. (M12-C300-D6)

Greenville, Miss. JOY DR. Exec: Joy Houck. (M12-C350-D7)

Greenwood, Miss. AIRPORT DR. Exec: W. A. Prewitt, Jr., Assoc. Theatres Ct. (M12-C425-D6)

Hattiesburg, Miss. BEVERLY DR., 3031½ - 10th Ave., P. O. Box 534. Exec: J. H. Hargroder. (M12-C200-D6)

Hattiesburg, Miss. BROADWAY DR. Exec: A. L. Royal. (M12-C400-D7)

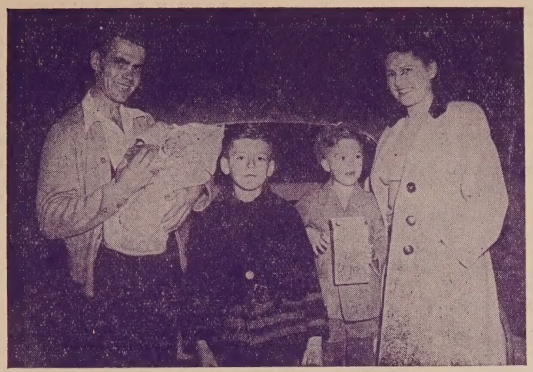
Jackson, Miss. DRIVE IN, Hwy. 80, P.O. Box 1046. Exec: Paramount Gulf Theatres Ct. (M12-C400-D6)

Jackson, Miss. 51 DR., N. State St. Exec: Connett and McLendon. (M12-C486-D6)

Jackson, Miss. SKYVUE DR. Exec: G. Harris. (M12-C400-D7)

Jackson, Miss. VARIA DR. Exec: Varia, Inc. (M12-C560-D7)

Laurel, Miss. DRIVE IN, Hwy. 11. Exec: C. E. Jenner. (M12-C280-D6)



SOLID BACKBONE OF DRIVE-IN PATRONAGE, this family at the Gratiot, Fraser, Mich., represents the class to which the operator must cater in every way from providing bottle warmers to selling popcorn. RIGHT: The theatre's refreshment stand does a thriving business with family trade.

Laurel, Miss. STARLITE DR. Exec: Petry & Adams. (M12-C450-D7)

Magee, Miss. 49 DR. Exec: U. B. Everett. (M12-C270-D7)

McComb, Miss. REN DR., Hwy. 24, P. O. Box 327. Exec: R. E. Renfroe. (M12-C350-D7)

Meridian, Miss. MERIDIAN, Hwy. 81, P.O. RFD. 19. Exec: G. R. Moody. (M12-C300-D6)

Meridian, Miss. ROYAL DR. Exec: A. L. Royal. (M12-C400-D6)

Natchez, Miss. STARLITE DR. Exec: Charles Morel. (M12-C300-D6)

Pascagoula, Miss. CARVIEW DR. Exec: Edw. Fessler. (M12-C350-D6)

Pascagoula, Miss. LAKE DR. Exec: Lake Dr. Corp. (M12-C400-D6)

Pass Christian, Miss. MOONLITE DR. Exec: Millet & Luke. (M12-C473-D7)

Picayune, Miss. PINE HILL DR. Exec: Th. Serv. (M12-C400-D7)

Prentiss, Miss. RITZ DR. Exec: Th. Serv. (M12-C400-D7)

Taylorsville, Miss. LAKEVIEW DR. Exec: A. W. Vowell. (M12-C210-D6)

Taylorsville, Miss. 35 DR. Exec: H. L. McLaurin. (M12-C* -D7)

Vicksburg, Miss. DRIVE IN. Exec: Grady-Payne-Rater. (M12-C255-D6)

Waynesboro, Miss. DRIVE IN. Exec: Royal & Bunch. (M12-C300-D7)

Yazoo City, Miss. IDLE HOUR DR., P.O. Box 154E, RR #2. Exec: F. M. Sigrest. (M12-C200-D6)

Texas

Texarkana, Tex. JOY DRIVE IN, Hwy. 59 Exec: Joy N. Houck, Joy Theatres Ct. (M12-C600-D7)

Texarkana, Tex. LOOP DR. Exec: Joy N. Houck, Joy Theatres Ct. (M12-C700-D7)

NEW YORK TERRITORY

New Jersey

Brielle, N. J. MOTOR VUE DR. Exec: Ind. Th. Serv. (M8-C250-D7)

Eatontown, N. J. EATONTOWN DR., Rt. 35. Exec: Walter Reade Ct., New York, N. Y. (M8-C650-D7)

Farmingdale, N. J. FLY-IN DR., Rt. 34. Exec: E. I. Brown. (M8-C500-D7)

Farmingdale, N. J. SHORE DR., P.O. Box 114, R.D. 2, Rts. 33 and 34. Exec: J. J. Thompson, Eastern Drive-In Theatres Ct., New York, N. Y. M7-C600-D7)

Island Heights, N. J. BAY DR. Exec: E. I. Brown. (M8-C300-D7)

Ledgewood, N. J. GARDEN AUTO-TORIUM. Exec: W. P. Smith. (M8-C550-D7)

Morris Plains, N. J. MORRIS DR., Rt. 10. Exec: J. J. Thompson, Eastern Drive-In Theatres Ct., New York, N. Y. (M8-C600-D7)

New Brunswick, N. J. BRUNSWICK DR., Rt. 14. Exec: J. J. Thompson, Eastern Drive-In Theatres Ct., New York, N. Y. (M8-C600-D7)

Paramus, N. J. PARAMUS DR., Rt. 4. Exec:* (M8-C800-D7)

Paterson, N. J. TOTOWA DR., Rt. 6, P.O. Box 136, R.D. #2. Exec: J. J. Thompson, Eastern Drive-In Theatres Ct., New York, N. Y. (M8-C600-D7)

Ringoes, N. J. HUNTERDON DR. Exec: Col. Ned Wittingham and J. Hewitt. (M8-C300-D7)

Rutherford, N. J. DRIVE IN, Rt. S-3. Exec: Phil Smith Ct., Boston, Mass. (UNC). (M8-C1200-D7)

Rutherford, N. J. ROUTE 10 DR. Exec: Harry K. Hecht. (M8-C* -D7)

Saddle River, N. J. ROUTE 6 DR. Exec: Phil Smith Ct., Boston, Mass. (UNC). (M8-C1000-D7)

Toms River, N. J. TOMS RIVER DR., Rt. 37. Exec: Walter Reade Ct., New York, N. Y. (M8 C400-D7)

Trenton, N. J. LAWRENCE DR., Brunswick Pike, P.O. RFD #2. Exec: Walter Reade Ct., New York, N. Y. (M8-C600-D7)

Union, N. J. UNION DR., Rt. 29. Exec: J. J. Thompson, Eastern Drive-In Theatres Ct., New York, N. Y. (M8-C600-D7)

Woodbridge, N. J. WOODBRIDGE DRIVE IN, P. O. Box 315. Exec: Walte Reade Ct., New York, N. Y. (M8-C850-D7)

New York

Amityville, L. I., N. Y. MASSA PEQUA DR., P.O. Box 545. Exec: Zoo-Site Realty Corp. (M8-C600-D7)

Bethpage, L. I., N. Y. BETHPAGE DR., Hempstead Turnpike. Exec: Saul Lerner. (M7-C600-D7)

Croton-on-Hudson, N. Y. STARLITE DR., Rt. 9. Exec: Murray Briskin. (M7-C400-D7)

Elmsford, N. Y. ELMSFORD DR., P.O. Box 737. Exec: Arthur J. Steel. (M8-C500-D7)

Eltingville, L. I., N. Y. ELTINGVILLE DR. Exec: Fabian Ct. (M7-C550-D7)

Fishkill, N. Y. FISHKILL DR. Exec: Brandt Th. (M7-C500-D7)

Greenport, L. I., N. Y. SKYWAY DRIVE IN, 403 Main St. Exec: North Shore Featres, Inc. (M7-C400-D7)

Hyde Park, N. Y. HYDE PARK AUTOVISION DR. Exec: P. Eisenberg and S. F. Cohen. (M7-C48-D7)

Kingston, N. Y. 9-W DR., Rt. 9W. Exec: Walter Reade Ct., New York, N. Y. (M8-C650-D7)

Kingston, N. Y. SUNSET DR., R.D. #4, Box 44B. Exec: Harry Lamont, 100 State St., Albany 7. (M6-C550-D7)

Liberty, N. Y. MOUNTAIN DR., 12 Chestnut St. Exec: Dr. Luther Grant. (M8-C400-D7)

Middletown, N. Y. MIDDLETOWN DR., Rt. 17, R.D. #4. Exec: Harry Lamont, 100 State St., Albany 7. (M8-C300-D7)

Newburgh, N. Y. BROOKSIDE DR., Cochecton Turnpike. Exec: Al Suchman. (M8-C500-D7)

Newburgh, N. Y. MIDDLEHOPE DR., Balmville. Exec: T. Tulve. (M8-C450-D7)

New York (Bronx), N. Y. WHITESTONE BRIDGE DR., Bruckner Blvd. Exec: Michael Redstone. (M7-C850-D7)

Peekskill, N. Y. HOLLOW-BROOK DR., Oregon Rd. Exec: Nat Lapkin, Pres. Hollow Brook Drive-In Theatre Co. c/o Fabian Theatres Ct., 1501 B'way, New York. (M7-C600-D7)

Poughkeepsie, N. Y. OVERLOOK DR., R.D. #3. Exec: Harry Lamont, 100 State St., Albany 7. (M-C500-D7)

Rock Hill, N. Y. ROCK HILL DR. Exec: H. K. Hecht. (M8-C510-D7)

Valley Stream, L. I., N. Y. SUNRISE H'WAY DR., Sunrise Hwy. Exec: Michael Redstone. (M8-C750-D7)

Warwick, N. Y. WARWICK DR. Exec: Chas. Finger and Geo. Miller. (M8-C800-D7)

OKLAHOMA CITY TERRITORY

Arkansas

DeQueen, Ark. DEQUEEN DR. Exec: Buster Smith. (M9-C200-D7)

Paris, Ark. PARIS DR. Exec: K. Lee Williams, UNC. (M9-C600-D7)

Oklahoma

Ada, Okla. #2 DR. Exec: Video Ind. Theatres, Inc. Ct., Oklahoma City. (M9-C* -D7)

Ada, Okla. TOWER DR. Exec: Video Ind. Theatres, Inc. Ct., Oklahoma City. (M9-C400-D7)

Altus, Okla. ALTUS DR. Exec: Video Ind. Theatres, Inc. Ct., Oklahoma City. (M9-C400-D7)

Alva, Okla. ALVA DR. Exec: W. F. Deaton. (M9-C390-D7)

Ardmore, Okla. SKY-VIEW DR. Exec: E. B. Anderson, James Grauskin. (M9-C500-D7)

Ardmore, Okla. STAR-LITE DR. Exec: Video Ind. Theatres, Inc. Ct., Oklahoma City. (M9-C500-D7)

Ardmore, Okla. TOWER DR., West of City. Exec: Video Ind. Theatres, Inc. Ct., Okla. City. (M9-C400-D7)

Bartlesville, Okla. HILL TOP DR., Notawa Hwy. 60. Exec: Video Ind. Theatres, Inc. Ct., Oklahoma City. (M9-C448-D7)

Bartlesville, Okla. #2 DR. Exec: Video Ind. Theatres, Inc. Ct., Oklahoma City. (M9-C* -D7)

Blackwell, Okla. PIONEER DR. Exec: Video Ind. Theatres, Inc. Ct., Oklahoma City, Okla. (M9-C300-D7)

Bristow, Okla. DRIVE IN. Exec: H. A. Walling, UNC. (M9-C360-D7)

Checotah, Okla. 69 DR., So. of Town on U. S. 69. Exec: Dick Crumpler, J. P. Jones. (M9-C300-D7)

Chickasha, Okla. CHIEF DR. Exec: Video Ind. Theatres, Inc. Ct., Okla. City. (M9-C400-D7)

Claremore, Okla. WILL ROGERS DR. Exec: Video Independent Theatres, Inc. Ct., Okla. City. (M9-C300-D7)

Clinton, Okla. CLINTON DR. Exec: Video Ind. Theatres, Inc. Ct., Okla. City. (M9-C400-D7)

Cushing, Okla. SUNDOWN DR. Exec: Video Ind. Theatres, Inc. Ct., Okla. City. (M9-C320-D7)

Duncan, Okla. DUNCAN DR., Hwy. 81. Exec: Video Ind. Theatres, Inc. Ct., Oklahoma City. (M9-C480-D7)

Duncan, Okla. FIFTH ST. MOVIETTE. Exec: Jack Guest. (M9-C400-D7)

Elk City, Okla. 66 DR. Exec: Video Ind. Theatres, Inc. Ct., Okla. City. (M9-C400-D7)

Elk City, Okla. WESTLAND DR. Exec: Video Ind. Theatres, Inc. Ct., Oklahoma City. (M9-C* -D7)

El Reno, Okla. EL RENO DR. Exec: W. B. Shuttee. (M9-C400-D7)

Enid, Okla. ENID DR., Hwy. 81. Exec: Video Ind. Theatres, Inc. Ct., Okla. City. (M9-C618-D7)

Enid, Okla. TRAIL DR. Exec: Video Ind. Theatres, Inc. Ct., Oklahoma City. (M9-C300-D7)

Frederick, Okla. SUNSET DR. Exec: Video Ind. Theatres, Inc. Ct., Okla. City. (M9-C300-D7)

Guthrie, Okla. BEACON DR. Exec: Video Ind. Theatres, Inc. Ct. (M9-C450-D7)

Guymon, Okla. HI WAY 54 DR. Exec: Lewis Long. (M9-C430-D7)

Healdton, Okla. DERRICK DR. Exec: Glen Thompson. (M9-C250-D7)

Henryetta, Okla. HILL TOP DR. Exec: Video Ind. Theatres, Inc. Ct., Okla. City. (M9-C400-D7)

Hobart, Okla. CREST DR., Hwy. 183. Exec: Video Ind. Theatres, Inc. Ct., Okla. City. (M9-C370-D7)

Holdenville, Okla. BUCKSKIN DR. Exec: Video Ind. Theatres, Inc. Ct., Okla. City. (M9-C300-D7)

Hugo, Okla. CIRCUS DR. Exec: Video Ind. Theatres, Inc. Ct., Oklahoma City. (M9-C300-D7)

Kingfisher, Okla. THOMAS DR. Exec: John Thomas. (M9-C250-D7)

Lawton, Okla. AUSTIN DR., Hwy. 62. Exec: W. C. Austin. (M9-C600-D7)

Lawton, Okla. HANKINS DR. Exec: Jack and Ned Hankins. (M9-C600-D7)

Lawton, Okla. MOUNT SCOTT DR. Exec: Pearl Hair and Joe Martin. (M9-C500-D7)

Lindsay, Okla. DRIVE IN. Exec: Avece T. Waldron. (M9-C* -D7)

Madill, Okla. MADILL DR. Exec: Edgar Peak. (M9-C200-D7)

Mangum, Okla. CAPITOL DR. Exec: Video Ind. Theatres, Inc. Ct., Oklahoma City. (M9-C260-D7)

Miami, Okla. TRI STATE DR. Exec: Video Ind. Theatres, Inc. Ct., Okla. City. (M9-C400-D7)

Norman, Okla. RANCHO DR. Exec: Video Ind. Theatres, Inc., Ct., Oklahoma City. (M9-C350-D7)

Norman, Okla. RIVERSIDE DR., Hwy. 9. Exec: E. A. Anderson. (M9-C400-D7)

Oklahoma City, Okla. AIR LINE DR. Exec: R. Lewis Barton. (M9-C700-D7)

Oklahoma City, Okla. CIRCLE DR., West of City. Exec: Harry Circle. (M9-C550-D7)

Oklahoma City, Okla. DEL CITY DR., 2900 Epperly Dr. Exec: R. Lewis Barton. (M8-C300-D7)

Oklahoma City, Okla. LAKE-AIR DR. Exec: B. and G. McFarland. (M9-C500-D7)

Oklahoma City, Okla. N. E. DR., P.O. Box 352A, R.R. #1. Exec: R. L. Barton. (M9-C600-D7)

Oklahoma City, Okla. NORTH WEST HIWAY DR., North West Hwy. Exec: O. F. Sullivan. (M9-C756-D7)

Oklahoma City 9, Okla. ODOM DR., 822 S. W. 29th. Exec: R. Lewis Barton. (M9-C1000-D7)

Oklahoma City, Okla. SKYVIEW DR., N. E. 23rd St. Exec: Sam Caporal. (M9-C892-D7)

Oklahoma City, Okla. TINKER DR., 500 N. Air Depot Blvd., Box 5558. Exec: R. Lewis Barton. (M9-C500-D7)

Oklahoma City, Okla. TWILIGHT DR. Exec: Video Ind. Th., Inc. Ct. (M9-C700-D7)

Okmulgee, Okla. TOWER DR. Exec: Video Ind. Theatres, Inc. Ct., Okla. City. (M9-C400-D7)

Pauls Valley, Okla. BREWER DR. Exec: L. E. Brewer. (M9-C450-D7)

Pawhuska, Okla. DRIVE IN. Exec: Video Ind. Theatres, Inc. Ct., Okla. City. (M9-C* -D7)

Ponca City, Okla. #2 DR. Exec: Video Ind. Theatres, Inc. Ct., Oklahoma City. (M9-C* -D7)

Ponca City, Okla. SKYVUE DR., Hwy. 77. Exec: Video Ind. Theatres, Inc. Ct., Oklahoma City. (M9-C608-D7)

Poteau, Okla. TOWER DR. Exec: Ray Hughes and O. K. Kemp. (M9-C208-D7)

Poteau, Okla. Y DR. Exec: M. A. Harris. (M9-C300-D7)

Sapulpa, Okla. TEE-PEE DR. Exec: Video Ind. Theatres, Inc. Ct., Oklahoma City. (M9-C300-D7)

Sayre, Okla. DRIVE IN. Exec: Video Ind. Theatres, Inc. Ct., Oklahoma City. (M9-C* -D7)

Seminole, Okla. SKY WAY DR., Hwy. 270. Exec: Video Ind. Theatres, Inc. Ct., Oklahoma City. (M9-C475-D7)

Shawnee, Okla. #2 DR. Exec: Video Ind. Theatres, Inc. Ct., Oklahoma City. (M9-C* -D7)

Shawnee, Okla. STARLIGHT DR., Hwy. 18. Exec: Video Ind. Theatres, Inc. Ct., Okla. City. (M9-C483-D7)

Stillwater, Okla. MOONLITE DR. Exec: Video Ind. Theatres, Inc. Ct., Oklahoma City. (M9-C400-D7)

Stillwater, Okla. #2 DR. Exec: Video Ind. Theatres, Inc. Ct., Oklahoma City. (M9-C* -D7)

Sulphur, Okla. COMET DR. Exec: Blakemon & Rochell. (M9-C100-D7)

Sulphur, Okla. STARLITE DR. Exec: Waite Kerr and Mrs. I. Adams. (M9-C300-D7)

Tulsa, Okla. APACHE DR., 3700 Apache St. Exec: L. E. Snyder. (M9-C300-D7)

Tulsa, Okla. RIVERSIDE DR., 71st So. Exec: Griffith Metropolitan Th. (M9-C600-D7)

Tulsa, Okla. SIXTY-SIX DR., Hwy. 66. Exec: Griffith Metropolitan Theatres Ct. (M9-C560-D7)

Tulsa, Okla. SAND SPRINGS DR. Exec: Line Amuse. (M9-C570-D7)

Tulsa, Okla. SKYLINE DR., 3800 N. Cincinnati St. Exec: Griffith Metropolitan Theatres Ct. (M9-C600-D7)

Tulsa, Okla. SHERIDAN DR. Exec: Video Ind. Th. Inc. Ct. (M9-C* -D7)

Vinita, Okla. LARIAT DR. Exec: Video Ind. Th. Inc. Ct. (M9-C300-D7)

Woodward, Okla. TERRYTIME DR. Exec: D. V. Terry. (M9-C416-D7)

Texas

Borger, Tex. BUNA VISTA DR., Box 2086. Exec: W. F. W. Theatres. (M12-C400-D7)

Borger, Tex. PLAINS DR. Exec: Video Ind. Theatres, Inc. Ct., Okla. City, Okla. (M12-C500-D7)

Borger, Tex. TRI CITY DR. Exec: Video Ind. Theatres, Inc. Ct., Okla. City, Okla. (M12-C400-D7)

Dumas, Tex. PRAIRIE DR. Exec: Bob Powell, Jr. (M9-C400-D7)

Pampa, Tex. PAMPA DR. Exec: Video Ind. Theatres, Inc. Ct., Okla. City, Okla. (M9-C500-D7)

Pampa, Tex. TOP O'TEXAS DR. Exec: Video Ind. Th., Inc. Ct. (M9-C400-D7)

Shamrock, Tex. PIONEER DR. Exec: J. S. Worley. (M9-C300-D7)

Wellington, Tex. BRONCHO DRIVE IN. Exec: Video Ind. Theatres, Inc. Ct., Okla. City, Okla. (M9-C302-D7)

OMAHA TERRITORY

Iowa

Cherokee, Ia. CORRAL DR. Exec: Pioneer Ct., St. Louis Park, Minnesota. (M6-C350-D7)

Clarinda, Ia. CLARINDA DR. Exec: Herman Fields. (M6-C425-D7)

Council Bluffs, Ia. COUNCIL BLUFFS DR. Exec: Tri States Ct., Des Moines. (M6-C600-D7)

Denison, Ia. DENISON DRIVE IN. Exec: Ted Krogh and Cecil Crouse. (M6-C306-D7)

Harlan, Ia. HARLAN DR. Exec: Alfred Haal. (M7-C300-D7)

Red Oak, Ia. DRIVE IN. Exec: Ed Haal. (M7-C300-D7)

Sheldon, Ia. SHELDON DR. Exec: Iowa Th. Corp. (M6-C400-D7)

Sioux City, Ia. DRIVE IN, 2900 N. Hwy. 75. Exec: Affiliated Th. (M6-C700-D7)

Spirit Lake, Ia. SPIRIT LAKE DR. Exec: Phil March. (M7-C400-D7)

Nebraska

Beatrice, Neb. HILLCREST DR. Exec: Smith & Anderson. (M7-C300-D7)

Columbus, Neb. DRIVE IN. Exec: Central States Theatres Corp. (M7-C350-D7)

Falls City, Neb. BREEZY HILL DR. Exec: Oscar Johnson. (M6-C400-D7)

Fremont, Neb. FREMONT DR. Exec: Central States Ct., Des Moines, Ia. (M6-C450-D7)

Grand Island, Neb. GRAND ISLAND DR. Exec: Tri States Ct., Des Moines, Ia. (M6-C650-D7)

Hastings, Neb. HASTINGS DR. Exec: Oscar Hanson, 1520 Davenport St., Omaha. (M6-C250-D7)

Holdredge, Neb. TOWER DR. Exec: Ervin Coyle and Son. (M6-C* -D7)

Kearney, Neb. DRIVE IN. Exec: Earl Lewis. (M6-C300-D7)

Lincoln, Neb. STAR VIEW OUTDOOR TH., Vine St. nr. 48th. Exec: I. Dubinsky. (M6-C600-D7)

Norfolk, Neb. DRIVE IN. Exec: Central States Ct., Des Moines, Ia. (M6-C350-D7)

Omaha, Neb. GRANDVIEW OUTDOOR TH. Exec: E. C. Petsch, Pleasantdale. (M7-C500-D7)

Omaha, Neb. OMAHA DR., 79th and Dodge Sts. Exec: Tri States Ct., Des Moines, Ia. (M6-C650-D7)

York, Neb. PINES DR. Exec: A. J. Chantry, Des Moines, Ia. (M6-C300-D7)

South Dakota

Lennox, S. D. TWILITE DR. Exec: Arden G. Davidson. (M6-C150-D7)

Winner, S. D. SHOO-FLY DR. Exec: Harvey Fast (UNC). (M6-C208-D7)

Yankton, S. D. MOVIELAND DR. Exec: Max Slaughter. (M6-C200-D7)

PHILADELPHIA TERRITORY

Delaware

Delmar, Del. DELMAR DR., P.O. RD. 2, Hwy. 13. Exec: N. Rosen. (M8-C750-D7)

Felton, Del. DIAMOND STATE DR. Exec: W. C. Evans, c/o Radio Station WDOV, Dover. (M8-C350-D7)

New Castle, Del. BRANDYWINE DR., Hwy. 13, 921 Market St. Exec: M. Geller, M & S Amusement Ent., Inc. (M8-C550-D7)

Newport, Del. PLEASANT HILL DR. Exec: Pleasant Hill Dr. Corp., Robt. P. Maclary. (M8-C600-D7)

Wilmington, Del. KERRY DR. Exec: R. R. M. Carpenter, Jr. (M8-C600-D7)

Wilmington, Del. WILMINGTON DR., Ball Park. Exec: R. R. M. Carpenter. (M8-C* -D7)

New Jersey

Bridgeton, N. J. BRIDGETON DR., Rt. 46. Exec: Mel Fox Ths. Ct., Phila., Pa. (M8-C375-D7)

Burlington, N. J. BURLINGTON DR., Rt. 25. Exec: Mel Fox Ths. Ct., Phila., Pa. (M8-C350-D7)

Camden, N. J. GARDEN STATE DR., Rt. 40. Exec: Varbalow Theatres Ct. (M8-C900-D7)

Gloucester Heights, N. J. STARLIGHT DR., Rt. 45 and Nicholson St. Exec: Smith & Liggett. (M8-C720-D7)

Pleasantville, N. J. ATLANTIC DR., P. O. Box 33. Exec: Walter Reade Ct., New York, N. Y. (UNC). (M10-C1000-D7)

Vineland, N. J. DELSEA DR., Delsea Drive and Grand Ave. Exec: Sablosky & Smith. (M8-C700-D7)

Wildwood, N. J. WILDWOOD DR. Exec: Mel Fox Ths. Ct., Phila., Pa. (M8-C500-D7)

Pennsylvania

Alderson, Pa. HANSON DR., Harvey's Lake. Exec: Nat Straley. (M8-C250-D7)

Alderson, Pa. SANDY BEACH DR., Harvey's Lake. Exec: Sam Slomowitz, 189 Barney St., Wilkes-Barre, Pa. (M8-C300-D7)

Allentown, Pa. AIRPORT DR., Rt. 987. Exec: Max Korr. (M8-C650-D7)

Allentown, Pa. BOULEVARD DR., 556 Union Blvd., Rt. 22. Exec: Milgram Theatres Ct., Philadelphia. (M8-C930-D7)

Berlinsville, Pa. ROUTE 45 DR., Rt. 45. Exec: William Beck, Rt. 2. Walnutport, Pa. (M7-C600-D7)

Bloomsburg, Pa. FAMILY DR. Exec: Jerome Engle. (M7-C600-D7)

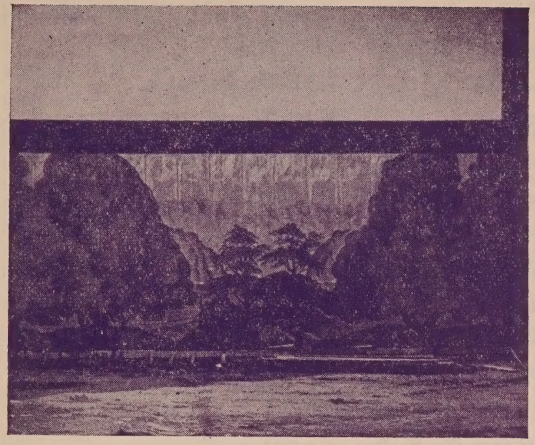
Brandonville, Pa. BRANDONVILLE DR., Rt. 924 —Btw. Hazleton and Shenandoah. Exec: Melvin Heinbach. (M8-C300-D7)

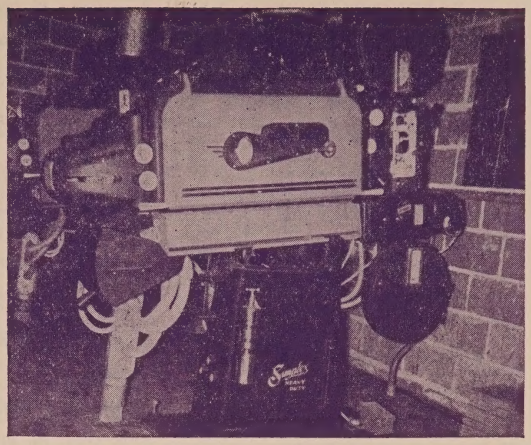
Burnham, Pa. BURNHAM DR., Logan Blvd. Exec: S. H. Rothermel, Burnham Drive-In Theatre, Inc. (UNC). (M7-C500-D6)

Carbondale, Pa. MID-VALLEY DR. Exec: Comerford Ct. (M7-C800-D7)

Chambersburg, Pa. SUNSET DR., R.D. #2. Exec: Sunset Drive-In Corp., Harold J. Kogan. (M8-C500-D7)

Clifton Heights, Pa. FAMILY DR., 713 Baltimore Ave. Exec: Mel Fox Theatres Ct., Philadelphia. (M8-C550-D7)





THE AREA UNDER THE SCREEN TOWER at the South City Drive-In, Philadelphia, Pa., has been handsomely beautified with a skillfully executed landscape mural. RIGHT: The modern projection booth contains Simplex machines. The 1,200-car theatre is owned and operated by Chas. Goldfine.

Coatesville, Pa. COATESVILLE DR., Rt. 30. Exec: Milton Schosberg. (M8-C325-D7)

Collingsville, Pa. DRIVE IN. Exec: Oscar Shaffer. (M8-C250-D7)

Conshohocken, Pa. RIDGE PIKE DR., P.O. RD. 2. Exec: Sablosky Ct. (M8-C950-D7)

Dallas, Pa. DALLAS DR. Exec: L. E. Groff, 215 Reynolds St., Kingston, Pa. (M8-C500-D7)

Dickson City, Pa. CIRCLE DR., Rt. 6. Exec: Albert Frangell, 404 Main St. Simpson. (M8-C500-D7)

Drums, Pa. HAZLETON DR., Rt. 309. Exec: Celeste Rossi, Jr., Beaver Meadows. (M8-C400-D7)

Dupont, Pa. COMERFORD DR., Dupont Hwy. Exec: Comerford Amuse. Co., Scranton. (M8-C1200-D7)

Easton, Pa. EASTERN-MEDINA DR., Rt. 22. Exec: Eastern Medina Drive-In Theatres, Inc. (M8-C500-D7)

Eddystone, Pa. CHESTER PIKE DR., Rt. 13. Exec: Mel Fox Theatres Ct., Philadelphia. (M8-C700-D7)

Emmaus, Pa. SHIMERVILLE DR., R.D. #1. Exec: J. Christofaro. (M8-C276-D7)

Espy, Pa. COLONIAL DR. Exec: Wm. E. Schmidt. (M8-C750-D7)

Frackville, Pa. HI WAY DR., Rt. 122. Exec: Paul Kerrigan. (M8-C350-D7)

Freeland, Pa. POPULAR DR., Rt. 490. Exec: Jos. Lazo, 87 S. Laurel St., Hazleton. (M8-C300-D7)

Harrisburg, Pa. HARRISBURG DR., Rt. 22 and Linglestown Rd. Exec: Paul Kerrigan, Frackville. (M8-C600-D7)

Harrisburg, Pa. KEYSTONE DR., Rt. 422. Exec: Sablosky Ct. (M8-C500-D7)

Harrisburg, Pa. SILVER SPRING DR., Carlisle Pike—Rt. 11. Exec: R. J. Jones, Holly Theatre, Mt. Holly, Pa. (M8-C750-D7)

Hatfield, Pa. SPEEDWAY OPEN AIR TH. Exec: Duke Wilcox (Closed). (Sit in stands)

Hazleton, Pa. LAUREL DR., McAdoo-Hazleton Hwy., P.O. Box 315L, R.D. #1. Exec: Anthony Sacco, 32 First Ave. (M8-C400-D7)

Hummels Wharf, Pa. NUWAY DR. Exec: M. L. Spiegelmeyer. (M8-C651-D7)

Lake Wallenpaupak, Pa. WHITE BEAUTY DR., Greentown, P.O. Exec: Richard and Leonard Guccini. (M5-C200-D7)

Lancaster, Pa. SKYVUE DR., Rt. 30 East. Exec: Harry Chertcoff Theatres Ct. (UNC). (M8-C800-D7)

Langhorne, Pa. LINCOLN DR., Bensalem Township. Exec: Neil Hellman. (M8-C900-D7)

Lebanon, Pa. KEY DR., Lebanon and Reading Hwy. Exec: Sablosky Ct. (M8-C400-D7)

Lehighton, Pa. MAHONING DR., btw. Rts. 443 and 902. Exec: Max Korr. (M8-C500-D7)

Lewistown, Pa. MIDWAY DR. Exec: Irving Berney, c/o Pastime Theatre, Lewistown. (M8-C400-D6)

Lock Haven, Pa. PARK DR. Exec: Blatt Bros. Ct., Pittsburgh. (M8-C450-D7)

Mahanoy City, Pa. COUNTRY VIEW DR. Exec: Luther Holt. (M8-C350-D7)

Matamoras, Pa. TRI STATE DR. Exec: Irving Mulst, Middletown, N. Y. (M8-C* -D7)

Moosic, Pa. OAKHILL DR. Exec: Scavo Bros. (M8-C300-D7)

Mountain Top, Pa. SUNSET DR., Rt. 309. Exec: Vincent Novinski and Assoc. (M8-C200-D7)

Mount Carmel, Pa. NATALIE DR., Rt. 54. Exec: Max Korr. (M8-C600-D7)

Muncy, Pa. STARLITE DR., Rts. 202 and 14, P.O. Box 237. Exec: Chester Darrin and Roy Brehm, Renova, Pa. (M8-C720-D7)

New Oxford, Pa. CROSS KEYS DR., Box 25, Lincoln Hwy. W. of Cross Keys. Exec: R. L. McCool, DuBois. (M8-C450-D7)

Newton Lake, Pa. IDEAL DR., Rt. 70. Exec: James Cerra. (M8-C435-D7)

Orrtana, Pa. CALEDONIA PARK IN, Rt., 30. Exec: H. O. Bondurant. (M8-C400-D7)

Philadelphia, Pa. SOUTH CITY DR., Broad St. and Pattison Ave. Exec: Charles Goldfine (M9-C1200-D7)

Pottsville, Pa. POTTSVILE DR., Rt. 122 Mill Creek Rd. Exec: G. S. Wolfe. (M8-C1000-D6)

Reading, Pa. MOUNT PENN DR. Exec: Jay Emanuel, Fabian Theatres Ct., P.O. Box 965. (M8-C1000-D5)

Schuylkill Haven, Pa. RENNINGER DR., Rt. 122. Exec: C. Swade and Murphy, 48 S. Lehigh, Frackville. (M8-C500-D6)

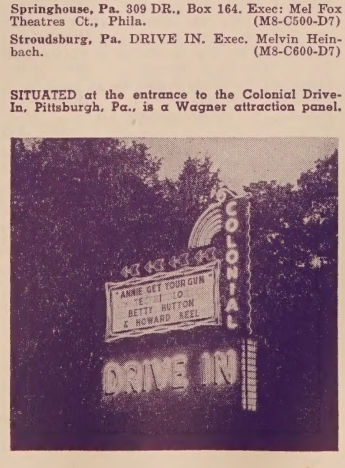
Shamokin, Pa. SHAMOKIN DR. Exec: W. S. Finch. (M8-C200-D7)

Spring Glen, Pa. SKYVIE DRIVE IN. Exec: Artz and Carl. (M8-C550-D7)

Springhouse, Pa. 309 DR., Box 164. Exec: Mel Fox Theatres Ct., Phila. (M8-C500-D7)

Stroudsburg, Pa. DRIVE IN. Exec. Melvin Heinbach. (M8-C600-D7)

SITUATED at the entrance to the Colonial Drive-In, Pittsburgh, Pa., is a Wagner attraction panel.



Tamaqua, Pa. VALLEY DRIVE, P.O. R.D. 2, Still Creek, Pa. Exec: Petrole Bros. (M8-C480-D7)

Temple, Pa. READING DR., Berkley Rd., Rt. 222, P.O. Box 408. Exec: Jay Emanuel, Fabian Theatres Ct. (M8-C744-D7)

Thomasville, Pa. LINCOLN DR., Rt. 30, R.D. 1 York Co. Exec: H. F. Halliwell, C. Smith, E. M. Thorne. (M8-C750-D6)

Tunkhannock, Pa. STARLITE DR., P. O. R.D. 3. Exec: Marvin Sands. (M7-C250-D6)

Williamsport, Pa. LYCOMING DR. Exec: Paul Schaeffer (M8-C850-D7)

Wyoming, Pa. MOONLIGHT DR. Exec: Wm. Kopelo. (M8-C100-D7)

York, Pa. STONY BROOK DR., Rt. 30. Exec: Vernon Smith. (M8-C900-D7)

PITTSBURGH TERRITORY

Pennsylvania

Albion, Pa. MAPLES DR. Route 18. Exec. John Trasovitch and P. Renale. (M6-C400-D7)

Aliquippa, Pa. GREEN GARDEN OPEN AIR THEA., Hopewell Township. Exec: Peter L. Kulik. (M6-C350-D7)

Altoona, Pa. ALTOONA DR., Rt. 36. Exec: Earl R. Blatt, Blatt Bros. Theatres Ct., Pittsburgh. (M6-C700-D7)

Altoona, Pa. SUPER 220 DR. Exec: Grance Outdoor Theatres. (M6-C600-D7)

Baden, Pa. ABC DR., Rt. 88, P.O. Box 142. Exec: Phil Smith Ct., Boston, Mass. (M6-C750-D7)

Beaver, Pa. TUSCA DR., Box 122. Exec: Dr. Lewis H. Urling. (M6-C650-D7)

Beaver Falls, Pa. HI WAY 51 DR., Rt. 51. Exec: J. Wincek (M6-C500-D7)

Beaver Falls, Pa. SPOTLIGHT 88 DR., Rt. 88. Exec: Ralph Felton. (M8-C600-D7)

Bedford, Pa. MOONLITE DRIVE IN. Exec: Al Burtnett, Moonlite, Inc. (M8-C350-D7)

Belle Vernon, Pa. SUPER 71 DR. Rts. 71 and 711. Exec. Theodore Grance (M6-C700-D7)

Braddock, Pa. SUNDAY DR., Rt. 40. Exec: Penn-Mar Amuse. Co. (M6-C250-D6)

Bridgeville, Pa. EL RANCHO DR. Rt. 28. Exec: Romeo Chiappini, 800 Michigan Ave., Jeannette, Pa. (M6-C750-D7)

Brownsville, Pa. FICKS DR. Exec. Moody & Dickinson. (M6-C400-D7)

Butler, Pa. BUTLER DR., Rt. 68. Exec: A. B. Caldwell (M8-C350-D6)

Butler, Pa. GEIBELS DR., Rt. 68. Exec: J. Geibels (16mm.). (M6-C200-D6)

Carmichaels, Pa. SKY VIEW DR., Rt. 88. Exec: L. Stuler. (M6-C350-D7)

Carrolltown, Pa. HIWAY DR. Exec: John M. Ridilla, P. O. Box 150, Latrobe, Pa. (M6-C300-D7)

Chicora, Pa. CHICORA DR. Exec: Blatt Bros. (M6-C350-D7)

Clarion, Pa. MIDWAY DR., Exec: Norbert Stern. (M7-C425-D7)

Claysville, Pa. SUNSET BEACH AUTO TH., Rt. 40, R.D. #1. Exec: C. M. Ducray. (M8-C300-D7)

Clearfield, Pa. SUPER 322 DR. Exec: Theo. Grance. (M6-C600-D7)

Conneaut Lake, Pa. LAKESIDE DR. Exec: Elmer Hazley, Joe Yacish. (M6-C400-D7)

Coraopolis, Pa. KEN MAWR DR. Exec: Paul G. Trunnick. (M8-C400-D7)

Coraopolis Hgts., Pa. DEPENDABLE DR. Exec: Joe Marcus, 419 Mill St., Coraopolis. (M6-C400-D7)

Crafton, Pa. TWIN HI-WAY DR., Route 22-30. Exec: Geo. Saittis. (M6-C1000-D7)

Cranberry, Pa. SKI HI DR., Rts. 322 and 257. Exec: Ray Woodard, Kayton Amuse. Ct., Montgomery, W. Va. (M6-C432-D7)

Donaldson, Pa. LAKEVIEW DR. Exec: Wm. Basle. (M6-C350-D7)

Du Bois, Pa. HI WAY DR. Exec: A. P. Way. (M7-C350-D7)

East McKeesport, Pa. BLUE DELL DR. Exec: T. Moriacco. (M6-C630-D7)

East McKeesport, Pa. MAPLE DR., Lincoln Hwy. Exec: Max Arnold and Jack Judd (M7-C1100-D7)

Ellwood City, Pa. BLUE SKY DR., Zelienople Rd. Exec: J. Glorioso, J. Favorite. (M7-C450-D7)

Erie, Pa. LAKE VIEW DR. Exec: Tommy Cowell. (M6-C350-D7)

Erie, Pa. LAWRENCE PARK DR. Exec: Gold & Coelan. (M6-C375-D7)

Erie, Pa. SKYWAY DR., Rt. 5. Exec: Carl Guerrein. (M8-C550-D7)

Erie, Pa., STAR DR., 2515 W. 12th St., Rt. 5. Exec: Gold & Coelan. (M8-C572-D7)

Farrell, Pa. HICKORY DR., 636 New Castle Rd. Exec: (*). (M8-C* -D7)

Geistown, Pa. RICHLAND DR. Exec: Somerset Amuse. Co. (M7-C450-D7)

Greensburg, Pa. ODIN DR. Exec: Bruno Ferrari, John Ridilla, John Slate. (M6-C400-D7)

Grove City, Pa. LARKFIELD DR., Rt. 78, R.D. #3. Exec: C. De Marsh. (M8-C350-D6)

Harmarville, Pa. HARMAR DR. Exec: Norbert Stern and Steve Rodnok. (M8-C600-D7)

Imperial, Pa. PENN LINCOLN DR., Rts. 22 and 30. Exec: Arthur Klixbull (M8-C350-D7)

Indiana, Pa. PALACE GARDEN DR. Exec: John Kerzen. (M6-C500-D7)

Indianhead, Pa. VALLEY DR., R.D. #3. Exec: Richard Sparks. (M6-C300-D7)

Irwin, Pa. SUPER 30 DR., Rt. 30. Exec: Theodore Grance. (M6-C700-D7)

Johnstown, Pa. WESTMONT DR. Exec: Westmont Enterprises, Inc. (M6-C800-D7)

Kittanning, Pa. COMMUNITY DR., Rt. 422. Exec: Ernest Stern. (M6-C300-D7)

Latrobe, Pa. HI WAY DR., Rt. 30. Exec: John Ridilla. (M7-C400-D7)

Leechburg, Pa. WOODLAND DR., P.O. R.D. 1. Exec: Harold A. Lee. (M7-C250-D7)

Lemont Furnace, Pa. STAR LITE DR., Rt. 119. Exec: Ted Laskey. (M9-C600-D7)

McKeesport, Pa. RAINBOW GARDEN DR., Lincoln Way and Rt. 88, P. O. Box 526, R.D. 1. Exec: Joseph Volpe. (M6-C350-D7)

Meadville, Pa. AIRWAY DR., Rt. 19. Exec: Edward F. Dodge. (M6-C385-D7)

Monongahela, Pa. HILLTOP DR., Route 837. Exec: Lindley B. Dugan and Oliver Kinnear. (M8-C400-D7)

Morrell, Pa. BLUE RIDGE DR. Exec: Laskey Bros. (M6-C400-D7)

Morrell, Pa. COMET DR. Exec: A. C. DeMichelis, Strand Th., Dunbar, Pa. (M6-C300-D7)

Mundys Corner, Pa. FAMILY DR., Rt. 22. Exec: K. A. Vaveris. (M7-C565-D7)

New Castle, Pa. SKYLINE DR., Rt. 224. Exec: Mitchell Kwiatkowski. (M7-C450-D7)

New Castle, Pa. SUPER CASTLE DR., Rt. 422. Exec. Theodore Grance. (M6-C760-D7)

New Kensington, Pa. FAMILY DR., Rt. 56, P.O. Box 12. Exec: Z. L. Bass. (M6-C680-D7)

New Kensington, Pa. GATEWAY DR. Exec: Serrao Bros. (M6-C525-D7)

Pittsburgh, Pa. COLONIAL DR. Exec: Associated Drive-In Theatres. (M6-C500-D7)

Pittsburgh, Pa. SILVERLAKE DR., 809 Liberty Ave. Exec: Gabe Rubin. (M7-C550-D7)

Pittsburgh, Pa. SOUTH PARK DR., Rt. 88, 436 4th Ave. Exec: Norbert and Ernest Stern. (M8-C400-D7)

Punxsutawney, Pa. STARLITE DR., Rt. 30. Exec: Bert. S. Fetterman. (M6-C450-D7)

Richland, Pa. RANALLI DR. Exec: Marco Ranalli, Rt. 8, Glenshaw, Pa. (M6-C400-D7)

Saint Marys, Pa. FAIRVIEW DR., Rt. 255, P.O. Box 342. Exec: Joseph A. Farrell. (M6-C300-D7)

Scottdale, Pa. EVERGREEN DR., P.O. Box 71, Mt. Pleasant Rd., Exec: Donald J. Ruth. (M6-C300-D7)

Seward, Pa. LAUREL HILL DR., Rt. 56. Exec: Walter F. Litzinger (16mm.). (M6-C275-D7)

Sewickley, Pa. BROOKSIDE DR., Warrendale Rd. Exec: R. W. Thomson, Jr. (M6-C400-D7)

Sharon, Pa. HICKORY DR., Rt. 62. Exec: Chris Lampros. (M8-C650-D7)

Smithfield, Pa. MOONLITE DR., Rt. 119. Exec: Steve Danko. (M8-C350-D7)

Somerset, Pa. ROOF GARDEN DR. Exec: J. R. Betters, Vogue Terrace, McKeesport, Pa. (M8-C350-D7)

State College, Pa. STARLITE DR. Exec: F. & S. Dr. Th. Co. (M6-C600-D7)

Titusville, Pa. AUTO TH. Exec: A. V. Kunes, Drake Amusement, 732 E. Main St. (M6-C500-D7)

Transfer, Pa. REYNOLDS DR., Greenville Rd., Rt. 18. Exec: Carl McKnight. (M6-C400-D7)

Turtle Creek, Pa. PITTSBURGH DR., Rt. 22. Exec: H. J. Ochs. (M7-C600-D7)

Uniontown, Pa. RAINBOW DR., Rt. 51. Exec: Lou Caralis. (M6-C450-D7)

Uniontown, Pa. SMELL DR., Rt. 21, McClellandtown Rd. Exec: M. V. Smell (16mm.). (M6-C250-D7)

Warren, Pa. WHITE WAY DR., Rt. 6, R.D. #3. Exec: Ben White. (M7-C400-D7)

Washington, Pa. ROUTE 19 DR., Rt. 19. Exec: Bill Basle. (M7-C500-D7)

Waterford, Pa. SUNSET DR., Rt. 97. Exec: Phelps & Wilson. (M6-C350-D7

Waynesburg, Pa. WAYNESBURG DR., Route #180. Exec: Louis Stuler and Durward Coe. (M6-C300-D7)

West Brownsville, Pa. CUPPIES DR., Rt. 40. Exec: J. K. Kaupp. (M6-C520-D7)

Westmont, Pa. WESTMONT DR. Exec: Geo. Minno, 231 Franklin, Johnstown. M6-C1000-D7)

Wexford, Pa. STARLITE DR., Route No. 19. Exec: J. H. B. Enterprises. (M7-C700-D7)

Windber, Pa. SILVER DR., P.O. Box 487. Exec: Maurice Fruhlinger. (M6-C300-D7)

West Virginia

Blackville, W. Va. DRIVE IN. Exec: Guy Pauley. (M6-C200-D7)

Bruceton Mills, W. Va. BRUCETON DR. Exec: Cowell & Stemple. (M6-C150-D7)

Buckhannon, W. Va. WEST'S DR. Exec: Garland West. (M6-C350-D7)

Chester, W. Va. HILLTOP DR., R.F.D. #1. Exec: Chas. Pittinger. (M6-C300-D7)

Clarksburg, W. Va. ELLIS DR., Rt. 50 East. Exec: Ellis Bros. (M8-C300-D7)

Clarksburg, W. Va. SNYDER DR. Exec: Clarence Snyder. (M8-C300-D7)

Clarksburg, W. Va. SPEEDWAY DR. Exec: Geo. Clelland. (M8-C200-D7)

Clarksburg, W. Va. WARNER SKYLINE DR., Rt. 19. Exec: C. A. Warner. (M6-C400-D7)

Elkins, W. Va. ELKINS DR., Rt. 33. Exec: Bretsel Lang and Harold Talbott. (M6-C250-D7)

Fairmont, W. Va. HARMONY DR. Exec: E. C. Wilson. (16 mm.) (M6-C* -D7)

Fairmont, W. Va. STARLIGHT DR., Pleasant Valley Rd. Exec: Laskey Bros. (M8-C500-D7)

Fairmont, W. Va. TWILIGHT DR., P.O. Box 949. Exec: Theodore Reynolds, R. Hall, B. Artman. (M8-C500-D7)

Frank, W. Va. BARTOW DR. Exec: Wm. Kisner. (M6-C200-D7)

Glen Dale, W. Va. DRIVE IN. Exec: Co-op. (M6-C350-D7)

Grafton, W. Va. GRAFTON DR. Exec: James Compton. (M8-C250-D7)

Meadowbrook, W. Va. SUNSET DR., Rt. 19. Exec: Alex Silay. (M8-C400-D7)

Metz, W. Va. WILSON DR., Rt. 250. Exec: E. C. Wilson (16mm.). (M6-C150-D7)

Montrose, W. Va. FRIENDLY DR., Rt. 219. Exec: Robt. E. Phares. (M6-C150-D7)

Morgantown, W. Va. BUNKER HILL DR., Fairmont Rd., Rt. 19. Exec: Orville Pauley. (M6-C400-D7)

Morgantown, W. Va. OAKS OPEN AIR. Exec: Jack Maple. (M7-C500-D7)

Morgantown, W. Va. STARLITE DR. Exec: (*) (16mm.). (M7-C* -D7)

Morgantown, W. Va. TOWN AND COUNTRY DR., Cheat Canyon Park. Exec: Wm. Cobun. (M7-C200-D7)

Morgantown, W. Va. WESTOVER DR. Exec: M. J. Bell, 701 University. (M7-C500-D7)

New Martinsville, W. Va. SKYWAY DR. Exec: Geo. Petropolis. (M6-C300-D7)

New Martinsville, W. Va. WORK'S DR. Exec: Jimmy Work. (M6-C400-D7)

Phillipi, W. Va. SKYVIEW DR. Exec: Alex Silay and Steve Medve. (M6-C400-D7)

Rowelsburg, W. Va. CHEAT RIVER DR. Exec: Gerald Shay. (M6-C200-D7)

Short Creek, W. Va. STARLITE DR. Exec: Geo. Kellas. (M6-C200-D7)

Smithburg, W. Va. STARDUST DR. Exec: L. L. Ash. (M6-C110-D7)

Steelton, W. Va. CLEGGS SUPER SKYWAY DR. Exec: Howard Clegg. (M6-C250-D7)

Uffington, W. Va. RIDGEDALE DR. Exec: R. F. Hanson, J. B. McDonald. (M6-C90-D7)

Wellsburg, W. Va. BLUE MOON DR., P.O. Box 489. Exec: C. Cionni. (M6-C300-D7)

Wheeling, W. Va. GROVE DR., Elm Grove. Exec: H. Ochs. (M7-C500-D7)

Wierton Heights, W. Va. BELLE-AIR DR. Exec: Jos. and Mary Yacos. (M7-C350-D7)

PORTLAND TERRITORY

California

Yreka, Calif. YREKA DR. Exec: Sterling Th., Inc. (M9-C300-D7)

Oregon

Baker, Ore. BAKER DR. Exec: Voeller & Gelsen Tanner. (M9-C300-D7)

Baker, Ore. OLD TRAIL DR. Exec: Rex E. Voeller. (M9-C300-D7)

Beaverton, Ore. CANYON DR. Exec: J. T. Shiefield and Art Adamson. (M9-C500-D7)

Bend, Ore. BEND DR. Exec: Alber and Wm. Forman. (M9-C400-D7)

Coquille, Ore. MYRTLE LANE DR. Exec: Claver and Wood. (M9-C400-D7)

Cornelius, Ore. CAR VUE DR. Exec: Orange and Vincent Phelps and Don Watrous. (M9-C500-D7)

Corvallis, Ore. MIDWAY DR. Exec: Charles Whiteside and Art Adamson. (M9-C550-D7)

Cottage Grove, Ore. MORELOCKS DR. Exec: C. C. and W. M. Morelock. (M9-C400-D7)

DeLake, Ore. SWAN DR. Exec: Virgil Wells. (M9-C400-D7)

Empire, Ore. MOTOR VU DR. Exec. Wm. Graeper, Jr. (M9-C450-D7)

Eugene, Ore. EUGENE DR., 2860 S. Willamette. Exec: William R. Forman, Ted Gamble Ct. M9-C580-D7)

Eugene, Ore. NORTH END DR. Exec: A. B. Olsen. (M9-C430-D7)

Gearhart, Ore. SUNSET DR. Exec: Harold Wright. (M9-C430-D7)

Grants Pass, Ore. REDWOOD DR. Exec: Grants Pass Dr. Th., Inc. (M9-C470-D7)

Hermiston, Ore. GROVE DR. Exec: L. A. Moore. (M8-C480-D7)

Lebanon, Ore. LEBANON MOTOR VU DR. Exec: Tad Nelson. (M9-C500-D7)

Madras, Ore. K & D DR. Exec: K & D Th., Inc. (M9-C300-D7)

Medford, Ore. STARLIGHT DR. Exec: Robt. L. Lippert Theatres Ct. (M8-C600-D7)

Medford, Ore. VALLEY DR. Exec: A. Smith and Gaylord, Valley Drive-in Theatre Co. (M8-C550-D7)

Newport, Ore. YAQUINA DRIVE IN, Hwy. 101. Exec: McKivitts, Inc. (M9-C400-D7)

Pendleton, Ore. PENDLETON MOTOR IN, Rt. 1, P.O. Box 145A. Exec: Ray Steveson and Anderson. (M8-C300-D7)

Portland, Ore. AMPHITHEATRE DR., 9727 N.E. Union Ave. Exec: B. R. Keller and Phil Polsky. (M9-C600-D7)

Portland, Ore. BARBUR BOULEVARD DR. Exec: Bernard Galitzki and A. H. Bennett. (M9-C600-D7)

Portland, Ore. 82nd STREET DR., 9600 S.E. 82nd St. Exec: William R. Forman, Ted Gamble Ct. (M9-C800-D7)

Portland, Ore. SANDY BLVD. DR., 9345 N. E. Sandy Blvd. Exec: Forman & Gamble. (M9-C900-D7)

Portland, Ore. SUPER 99 DR., Hwy. 99. Exec: Willard Gamble and Al Forman. (M9-C500-D7)

Reedsport, Ore. SHORELINE DR. Exec: Earl Baltazar. (M9-C300-D7)

Roseberg, Ore. PINE DR. Exec: Umpqua Amuse. Co. (M9-C478-D7)

Salem, Ore. SALEM DR., Rt. 3. Exec: William R. Forman and Ted Gamble. (M8-C600-D7)

Springfield, Ore. CAR VU DR. Exec: Ronald J. Kuhn. (M9-C500-D7)

Springfield, Ore. CASCADE DR. Exec: Western Amuse. Co. (M9-C* -D7)

The Dalles, Ore. DALLES DR. Exec: Sterling Th., Inc. (M9-C300-D7)

Washington

Longview, Wash. YOUR DR., P.O. Box 889. Exec: Sterling Ths. (M9-C500-D7)

Vancouver, Wash. RENFRO DR. Exec: A. W. Adamson. (M9-C500-D7)

ST. LOUIS TERRITORY

Arkansas

Blytheville, Ark. SKYLINE DR. Exec: W. B. Robertson. (M8-C380-D7)

Blytheville, Ark. STARVIEW DR. Exec: Warren Moxley. (M8-C450-D7)

Illinois

Alton, Ill. STARLIGHT DR. Exec: Joe Goldfarb, Harry Beck. (M9-C875-D7)

Belleville, Ill. SKYVIEW DR. Exec: Bloomer Amusement Co. (M8-C500-D7)

Benton, Ill. MIDWAY DR. Exec: Robert Strauss and Joe Sullivan. (M8-9-C500-D7)

Cairo, Ill. 51 DR. Exec: Harry Young and Fred Sullivan. (M9-C450-D7)

Carbondale, Ill. WARING AUTO DR., Rt. 13. Exec: W. E. Waring, Jr., c/o Ritz Theatre, Cobden, Ill. (M10-C500-D7)

Carmi, Ill. 460 CARMI DR., Rt. 460. Exec: S. R. Stanley & Assoc. (M9-C500-D7)

Centralia, Ill. CENTRALIA DR., Rt. 16, P.O. Box 47. Exec: Homer S. Butler, Jr. (M9-C540-D7)

Collinsville, Ill. MOUNDS DR. Exec: Louis Jablonow, Jablonow-Komm Theatres, Peerless Theatre, St. Louis 15, Mo. (M9-C1000-D7)

East Alton, Ill. ALTWOOD DR., Old St. Louis Rd., Wood River P.O. Exec: Alton Amuse. Corp., Dubinsky Bros., P.O. Box 745, St. Joseph, Mo. (M9-C800-D7)

East St. Louis, Ill. DRIVE IN, P.O. R.R. 50, Rt. 159, French Village, Exec: Publix Theatres, Inc. c/o I. Wienshienk, Grand Theatre, Alton, Ill. (M9-C500-D7)

Effingham, Ill. RUSTIC STARLIGHT DR., U. S. Rt. 40, Exec: Central States Management. (M9-C400-D7)

Flora, Ill. RENDEZVOUS DR., Rt. 45, P. O. Box 92. Exec: Floyd Johnson. (M8-C400-D7)

Harrisburg, Ill. HARRISBURG DR. Exec: Olen J. Ingram, Harrisburg. (M9-C400-D7)

Herrin, Ill. EGYPTIAN DR., Rt. 148, 4c Lane. Exec: Harold Grear. (M8-C400-D7)

Herrin, Ill. MARLOW'S DR., Rt. 148. Exec: John Marlow. (M9-C900-D7)

Highland, Ill. AIR PARK, Rt. 40. Exec: Joseph Schremp. (M8-C300-D7)

Jacksonville, Ill. #67 DR. Exec: Central Amusement Corp. (M9-C450-D7)

Litchfield, Ill. SKYVIEW DR. Exec: Central States Th. Corp. (M9-C400-D7)

Mattoon, Ill. SKYWAY DR. Exec: R. O'Keefe, Danville. (M9-C425-D7)

Metropolis, Ill. EL CAPITAN DR. Exec: Massac Th., Inc. (M9-C400-D7)

Mt. Carmel, Ill. CARMEL DR. Exec: Keith Coleman. (M9-C350-D7)

Mt. Vernon, Ill. MT. VERNON DR., Rt. 148. Exec: Frank Glenn, Tamaroa. (M9-C450-D7)

Olney, Ill. OLNEY DR., Hwy. 50. Exec: H. E. Coen & Robert Hill. (M9-C300-D7)

Pana, Ill. PANA DR. Exec: Tanner Drive-In Theatre Corp. (M9-C400-D7)

Paris, Ill. TWIN LAKES DR., No. Main St., Rt. 1. Exec: Oral Pierson and F. B. Youndblood. (M9-C400-D7)

Quincy, Ill. GEM CITY DR. Exec: Gem City Drive-In Corp. (M9-C500-D7)

Robinson, Ill. GORDON DR., Gordon Junction. Exec: Central States Th. Corp. (M9-C400-D7)

Salem, Ill. CLUSTER DR. Exec: Cluster Theatre Ct. (M8-9-C500-D7)

Sandoval, Ill. HOLLYWOOD DR., Hwy. 50. Exec: R. R. Robinson. (M9-C350-D7)

Shelbyville, Ill. KAY DR. Exec: Merle Stewardson. (M9-C350-D7)

Springfield, Ill. SPRINGFIELD DR., Hwy. 66 and 29. Exec: J. N. Sikes. (M9-C800-D7)

Tamaroa, Ill. MELODY DR., Hwy. 51. Exec: Frank J. Glenn. (M9-C400-D7)

Taylorville, Ill. FRISINA DR. Exec: Central States Th. Corp. (M9-C400-D7)

Thayer, Ill. ROUTE 4 DRIVE IN. Exec: W. E. Swift. (M7-C300-D7)

Vandalia, Ill. VANDALIA DR. Exec: Tanner Drive-In Thea. Corp., Pana. (M9-C500-D7)

Indiana

Mt. Vernon, Ind. MT. VERNON DR. Exec: Thomas Baldwin, I. H. Leffel. (M8-C400-D7)

Kentucky

Kevil, Ky. PARK DR., Rt. 1. Exec: F. O. Shelby. (M8-C300-D7)

Murray, Ky. 95 DR. Exec: Enido Nucci. (M8-C250-D7)

Paducah, Ky. PADUCAH DR., Lone Oak Rd. Exec: Leo Keller, Columbia Amuse. Co. (M9-C500-D7)

Paducah, Ky. STARLITE DR., New Benton Rd. Exec: Lake Edwards. (M9-C400-D7)

Missouri

Affton, Mo. RONNIES DR., Baptist Church Lane and Lindbergh Drive. Exec: Movie Enterprises, Inc. (M8-C500-D7)

Arcadia, Mo. KILLARNEY DR. Exec: Irwin Degonia and Wm. Basden, Partner, Pilot Knob, Mo. (M8-C250-D7)

Cape Girardeau, Mo. CAPE DR., Rt. 61., Illmo P. O. Exec: Howard Bates. (M8-C400-D7)

Centralia, Mo. BEBE DRIVE IN. Exec: E. F. Bebermeyer. (M8-C250-D7)

Columbia, Mo. BROADWAY DR., 1100 block Broadway. Exec: Commonwealth Amuse. Ct. (M8-C500-D7)

Dexter, Mo. FAMILY DR. Exec: Yewell Lawrence. (M8-C400-D7)

Doniphan, Mo. STADIUM DR. Exec: Mrs. Ethel Chilton. (M8-C150-D7)

Farmington, Mo. CORRAL DR. Exec: Tom Edwards, Edwards and Plumlee Ct. (M8-C500-D7)

Fulton, Mo. FULTON DR. Exec: Don Kenneth Fikes. (M8-C400-D7)

Kirkwood, Mo. DRIVE IN, P.O. Box 72, 643 Cleveland St. Exec: Phil Smith Ct., Boston, Mass. (M8-C500-D7)

Leadwood, Mo. B & W DR. Exec: Jimmie Bradley and Eddie Wilkerson. (M* -C* D*)

Lebanon, Mo. MOONLIGHT DR., Rt. 32. Exec: Ralph Hough. (M8-C200-D7)

Mexico, Mo. LITTLE DIXIE DR. Exec: Central States Th. Corp. (M8-C500-D7)

Overland (St. Louis 14), Mo. AIRWAY DR., 10900 St. Charles Rd. Exec: Phil Smith Ct., Boston, Mass. (M8-C800-D7)

Perryville, Mo. HILL TOP DR., Rt. 25. Exec: Elmer Donze, St. Genevieve. (M8-C285-D7)

Poplar Bluff, Mo. POPLAR BLUFF DR., Rt. 67. Exec: Clyde Hogg and Clyde Richardson. (M8-C500-D7)

Rolla, Mo. ROLLA DR., Hwy. 66. Exec: R. E. Carney Theatres. (M8-C750-D7)

St. Louis, Mo. SKYLINE DR. Exec: PRBH Corp. (M8-C500-D7)

St. Louis Co., Mo. NORTH DR., Hwy. 99 and St. Cyr Rd. Exec: C. H. Kaiman, 4106 W. Florissant Ave., St. Louis. (M8-C1000-D7)

St. Louis Co., Mo. 66 PARK IN, Hwy. 66 and Sappington Rd. Exec: Fred Wehrenberg Ct. (M8-C800-D7)

Salem, Mo. STARLITE DR. Exec: L. L. Pruitt, Paul Hamaker. (M8-C* -D7)

Sikeston, Mo. DELTA DR., Box 376. Exec: Miss Geraldine Twitty. (M9-C225-D7)

Sikeston, Mo. SIKESTON DR. Exec: O. W. McCutcheon. (M9-C450-D7)

Warrenton, Mo. MOTOR VU DR. Exec: Mr. and Mrs. Wm. Zimmerman. (M8-C300-D7)

West Quincy, Mo. QUINCY DR. Exec: Dr. Eugene Brezany, 3515 St. Louis Ave., St. Louis 6. (M8-C600-D7)

Willow Springs, Mo. MINIATURE DR. Exec: Stanley Radford. (M8-C* -D7)

SALT LAKE CITY TERRITORY

Idaho

Blackfoot, Ida. MOTOR VUE TH. Exec: Albert Barrott and Oscar Paisley. (M6-C500-D7)

Boise, Ida. BOISE DR., West of City, P.O. Box 2558. Exec: J. W. Naylor. (M6-C300-D7)

Boise, Ida. BROADWAY DR. Exec: Boise Dr. Th. (M6-C* -D7)

Buhl, Ida. MOON GLO DR. Exec: Leonard Probasco. (M6-C* -D7)

Buhl, Ida. BUHL DR. Exec: Harris-Voeller Ct. (M6-C280-D7)

Burley, Ida. ALFRESCO DR., 2 miles No. of Burley. Exec: I. H. Harris, Harris-Voeller Theatres Ct. (M6-C450-D7)

Caldwell, Ida. MOTOR VIEW DR. Exec: Frank Judd and Assoc. (M6-C350-D7)

Caldwell, Ida. SKYLITE DR. Exec: Moyle and Goodman. (M6-C250-D7)

Coeur D'Alene, Ida. SHOWBOAT DR. Exec: Orrin E. Lee. (M6-C400-D7)

Emmett, Ida. DRIVE IN. Exec: Odell & Capell. (M6-C200-D7)

Idaho Falls, Ida. MOTOR VU DR., Yellowstone Hwy. No. 191. Exec: J. H. Moran, c/o Royal Theatre, Laurel, Mont. (M6-C550-D7)

Idaho Falls, Ida. SKY VUE DR. Exec: Cousins & Prestwich. (M6-C400-D7)

Jerome, Ida. AUTO TH. Exec: F. D. Judo, 251 E. Second, S., Salt Lake City 1, Utah. (M6-C210-D7)

Meridian, Ida. HIGHWAY 30 DR. Exec: R. L. Trathen, 251 E. Second, S, Salt Lake City 1, Utah. (M6-C400-D7)

Montpelier, Ida. MOTOR VU DR. Exec: Russ Dauterman, 1800 Harrison Ave., Salt Lake City 5, Utah. (M6-C300-D7)

Nampa, Ida. NAMPA-CALDWELL DR. Exec: Northwest Theatres, Meridian. M6-C350-D7)

Osborn, Ida. SILVER STAR DRIVE IN. Exec: George Kelton, B. J. Dickinson, S. K. Garrett. (M6-C300-D7)

Payette, Ida. PAY-OUT DR. Exec: Rex Voeller, Ontario, Ore. (M6-C300-D7)

Pocatello, Ida. POCATELLO DR., Hwy. 91. Exec: Tulles Bros. (M6-C250-D7)

Pocatello, Ida. STARLITE DR. Exec: T. M. Morris. (M6-C538-D7)

Rexberg, Ida. TETON-VU DR. Exec: Vern Fletcher. (M6-C350-D7)

Rupert, Ida. FAMILY DR. Exec: Burgess Crandall. (M6-C100-D7)

Twin Falls, Ida. MOTOR VU DR., Kimberley Rd., P.O. Box 728. Exec: R. L. Trathen, 251 E. Second, S, Salt Lake City 1, Utah. (M6-C437-D7)

Montana

Billings, Mont. BILLINGS MOTOR VU. Exec: J. H. Moran. (M6-C500-D7)

Billings, Mont. CITY VU DR. Exec: Steve Trenka. (M6-C500-D7)

Billings, Mont. SAGE DRIVE IN. Exec: Allen Kindt. (M6-C500-D7)

Bozeman, Mont. STARLIGHT DR. Exec: Bozeman Starlight Drive-In, Inc. (M6-C330-D7)

Butte, Mont. MOTOR VU. Exec: R. F. Wilmert. (M6-C500-D7)

Cut Bank, Mont. RANCH DR. Exec: Kelly, Hawkins & Scollard. (M6-C210-D7)

Glasgow, Mont. WEST DR. Exec: Survant Ths. (M6-C* -D7)

Glendive, Mont. SKYLARK DR. Exec: Lewis W. Moore. (M6-C300-D7)

Glendive, Mont. STAR-LITE DR. Exec: Lewis Moore. (M6-C300-D7)

Great Falls, Mont. MOTOR VU DR. Exec: Associated Amuse. Ct., Salt Lake City, Utah. (M6-C500-D7)

Hamilton, Mont. STARLITE DR. Exec: Dave B. Simon. (M6-C300-D7)

Hardin, Mont. SKY-VU DR. Exec: Conrad Seader. (M6-C* -D7)

Havre, Mont. SUNSET DR. Exec: Emil Don Tigny and Clarence Golder. (M6-C300-D7)

Helena, Mont. SUNSET DR. Exec: E. R. Munger. (M6-C500-D7)

Kalispell, Mont. SUNDOWN DR. Exec:* (M6-C250-D7)

Lewistown, Mont. WESTERNAIRE DR. Exec: Machler & Wagner. (M6-C200-D7)

Livingston, Mont. TWILIGHT DR., 310 E. Park. Exec: Ed Boehm. (M6-C450-D7)

Miles City, Mont. SUNSET DR. Exec: J. Holmes and Wm. Fowers, Missoula. (M6-C400-D7)

Missoula, Mont. MOTOR VU DR. Exec: B. J. Barrett. (M6-C400-D7)

Missoula, Mont. STATE DR. Exec: Wm. Fowers, #9 Hammond Arcade. (M6-C300-D7)

Sidney, Mont. DRIVE IN. Exec: J. M. Suckstorff. (M6-C300-D7)

Utah

American Fork, U. STARLITE DR. Exec: Central Utah Amuse. Co. (M6-C400-D7)

Bountiful, U. BOUNTIFUL MOTOR VIEW DR., Hwy. 91. Exec: J. N. Bills. (M6-C650-D7)

Brigham City, U. AUTO-VU DR. Exec: George Greghead, Salt Lake City. (M6-C330-D7)

Dragerton, U. STAR-LITE DR. Exec: Mario Marchino. (M6-C240-D7)

Layton, U. DAVIS DR. Exec: Associated Amuse. (M6-C400-D7)

Layton, U. LAYTON DR. Exec: H. F. Hawk. (M6-C300-D7)

Logan, U. CACHE DR. Exec: Harris-Voeller Th. (M6-C500-D7)

Logan, U. LOGAN DR., Hwy. 91. Exec: Harris-Voeller Th. (M6-C300-D7)

Midvale, U. UTE DR. Exec: Horace and Spencer Burkinshaw. (M6-C650-D7)

Ogden, U. MOUNT OGDEN DR., 3700 Wall Ave. Exec: Stephens Bros., 1220 Binford St. (M6-C300-D7)

Ogden, U. STARLITE DR. Exec: Starlite Dr. Co. (M6-C350-D7)

Ogden, U. WEBB MOTOR VU DR., Rt. 4. Exec: Associated Amuse. Ct., Salt Lake City. (M6-C785-D7)

Orem, U. GENEVA DR., Hwy. 91. Exec: Maurice Miller. (M6-C624-D7)

Price U. SUNSET DR. Exec: Billy R. Webb. (M6-C300-D7)

Provo, U. PIONEER DR., 1255 S. Springfield Rd. Exec: Associated Amuse. Ct., Salt Lake City. (M6-C600-D7)

Roy, U. RIVERDALE DR. Exec: R. Tulles and J. Naylor. (M6-C300-D7)

St. George, U. DIXIE MOTOR-VU DR. Exec: Ivan H. Hunt. (M8-C500-D7)

Salt Lake City, U. AIRPORT DR., 2700 W. North Temple. Exec: Ray F. Wilmart (M6-C300-D7)

Salt Lake City, U. AUTORIUM DR., 2nd West and 21st South. Exec: Frank Jenkins. (M6-C500-D7)

Salt Lake City, U. HYLAND DR., 3670 Highland Dr. Exec: Mel Smart. (M6-C600-D7)

Salt Lake City, U. MOTOR VU DR., 35th East and 33rd South. Exec: Erick Peterson. (M6-C700-D7)

Salt Lake City, U. PARK-VU DR. Exec: Huish & Gilhool Th. (M6-C* -D7)

Salt Lake City, U. REDWOOD DR. Exec: Mel Smart. (M6-C500-D7)

Salt Lake City, U. WOODLAND DR. Exec: Associated Amuse. Ct. (M6-C500-D7)

Springville, U. CINEMOTOR DR. Exec: Huish Circuit. (M6-C500-D7)

Tooele, U. MOTOR VUE DR. Exec: Sam Gillette. (M6-C300-D7)

Tremonton, U. MOONLITE DRIVE IN. Exec: H. D. Hurst. (M6-C300-D7)

Vernal, U. STARLITE DR. Exec: Huish-Gilhool. (M6-C300-D7)

Wyoming

Evanston, Wyo. MOTOR-VU DR. Exec: Russ Dauterman, 1800 Harrison Ave., Salt Lake City 5, Utah. (M6-C250-D7)

Newcastle, Wyo. STARLIGHT DR. Exec: B. J. Kearney. (M6-C200-D7)

SAN FRANCISCO TERRITORY

Guam

Agana. OUTDOOR. Exec: Brown-Maxon. (M12-C* -D7)

Territory of Hawaii

Honolulu. DRIVE IN. Exec: Consolidated Amuse. Co. (M12-C750-D7)

California

Alameda, Cal. ALAMEDA DR. Exec: Masser Bros. (M12-C865-D7)

Alameda, Cal. ISLAND AUTOMOVIES. Exec: Gannon Bros. (M12-C700-D7)

Alton, Cal. HUMBOLDT DR. Exec: Walter Bell. (M12-C535-D7)

Antioch, Cal. BRIDGEHEAD DR. Exec: F. Stamm and Son. (M12-C500-D7)

Armona, Cal. KINGS DR. Exec: W. Paddock and J. E. Meisner. (M12-C500-D7)

Auburn, Cal. AUBURN DR. Exec: Auburn Th. Co. (M12-C492-D7)

Belmont, Cal. STARLITE DR., Harbor Blvd. Exec: Trans-Calif. Theatres Ct. (M12-C650-D7)

Boulder Creek, Cal. STARVIEW DR., Big Basin Hwy. Exec: Trans-Calif. Theatres Ct. (M12-C300-D7)

Carmichael, Cal. WESTERNER DR. Exec: Robert Gingerich. (M12-C450-D7)

Ceres, Cal. CERES DR. Exec: Frank Lucido Ct. (M12-C380-D7)

Chico, Cal. CHICO DR. Exec: Sacramento Amuse. Co. (M12-C350-D7)

Chico, Cal. STARLITE DR., P. O. Box 552. Exec: Michael Naify, T. and D. Jr. Enterprises Ct. (M12-C550-D7)

Colma, Cal. EL RANCHO DR. Exec: Robert L. Lippert Ct. (M12-C840-D7)

Concord, Cal. CONTRA COSTA MOTOR IN, 2040 Contra Costa Hwy. Exec: Robert L. Lippert Ct. (M12-C450-D7)

Corning, Cal. BLUE FEATURE DR. Exec: William Brogden. (M12-C* -D7)

Cotati, Cal. REDWOOD DR., Hwy. 101. Exec: Robert L. Lippert Ct. (M12-C500-D7)

Delano, Cal. DEL-MAC DR. Exec: Frank August and Ernest Panero. (M12-C440-D7)

Dinuba, Cal. MIDWAY DR. Exec:* (M12-C500-D7)

Dos Palos, Cal. DOS PALOS DR. Exec: Regas & Hales, Inc. (M12-C350-D7)

El Cerrito, Cal. EL CERRITO MOTOR MOVIES, 6600 Fairmount Ave. Exec: Joe Blumenfeld Enterprises Ct. (M12-C650-D7)

Eureka, Cal. BELAIRE DR. Exec: Walter Bell. (M12-C500-D7)

Eureka, Cal. MIDWAY DR. Exec: Redwood-Midland Co. (M12-C* -D7)

Fairfield, Cal. SOLANO DR. Exec: Tegtmeier & Moore. (M12-C400-D7)

Firebaugh, Cal. FIREBAUGH MOTOR-IN, P. O. Box 366 Exec: Mr. and Mrs. C. S. Chestnut. (M12-C350-D7)

Fresno, Cal. MOON-GLO MOTOR MOVIE. Exec: Ray Thompson, Carol Carton, Leslie Pancake and Kenneth Thompson. (M12-C500-D7)

Fresno, Cal. STARLITE DR., 510 Lansing Way. Exec: Robert L. Lippert Ct. (M12-C600-D7)

Fresno, Cal. SUNSET DR. Exec: Robert L. Lippert Ct. (M12-C400-D7)

Gilroy, Cal. HECKER PASS DR. Exec: Levin Ct. (M12-C450-D7)

Hayward, Cal. MOTOR MOVIES, Tennyson and Niles Rds. Exec: Gordon Allen. (M12-C600-D7)

Hollister, Cal. MOONLIGHT DR., Rt. 1, Box 64. Exec: Hans Severinson. M12-C480-D7)

Keyes, Cal. STARLITE DR. Exec: Robert L. Lippert Ct. (M12-C600-D7)

Lodi, Cal. TOKAY DR. Exec: Sacramento Amuse. Co. (M12-C380-D7)

Madera, Cal. EL RIO DR. Exec: V. Preciado. (M12-C420-D7)

Malaga, Cal. MOTOR IN, Hwy. 99, 2049 Adoline St. Exec: Robert L. Lippert Ct. (M12-C700-D7)

Mendota, Cal. MARY'S DR. Exec: Anthony Bau. (M12-C350-D7)

Merced, Cal. STARLITE DR. Exec: Michael Naify, T. and D., Jr. Enterprises Ct. (M12-C603-D7)

Merced, Cal. TIOGA DR. Exec: Sacramento Amuse. Co. (M12-C350-D7)

Monterey, Cal. PARK DR. Exec: Michael Naify, T. and D. Jr. Enterprises Ct. (M12-C466-D7)

Mountain View, Cal. MONTE VISTA DR. Exec: Sunnymount Theatres, Inc. (M12-C863-D7)

Mount Shasta, Cal. DRIVE IN. Exec: M. E. Hammond. (M12-C375-D7)

Napa, Cal. KAY VON DR. Exec: Wm. Fowers and B. Quinn. (M12-C440-D7)

North Sacramento, Cal. STARLITE DR. Exec: Joe Blumenfeld Enterprises Ct. (M12-C765-D7)

Oakland, Cal. AIRPORT AUTO MOVIES. Exec: Frank Lucido Ct. (M12-C850-D7)

Oroville, Cal. MESA DR. P.O. Box 1310. Exec: George Hickox and Newell C. Post. (M12-C450-D7)

Palo Alto, Cal. PENINSULA DR., Bayshore Hwy. and Amarillo Rd. Exec: Western Dr. Th., Inc. (M12-C580-D7)

Paradise, Cal. PINE BREEZE DR. Exec: T & D, Jr. Enterprises. (M12-C394-D7)

Paso Robles, Cal. OAKS DR. Exec: Oak Enterprises. (M12-C298-D7)

Patterson, Cal. 33 DR. Exec: Mrs. Vada Fink. (M12-C340-D7)

Pittsburgh, Cal. AUTO MOVIES, Old Antioch Rd., P.O. Box 1271. Exec: Frank Lucido Ct. (M12-C525-D7 plus 400 seats)

Placerville, Cal. SE RANCHO DR. Exec: Lawrence Freitas and Victor Banta. (M12-C460-D7)

Pleasanton, Cal. VALLEY DRIVE IN. Exec: Westside Theatres, Inc. (M12-C385-D7)

Porterville, Cal. DRIVE IN Exec: Spivey & Schwin. (M12-C484-D7)

Red Bluff, Cal. RED BLUFF DR. Exec: T & D, Jr. Enterprises. (M12-C350-D7)

Redding, Cal. STARLITE DR. Exec: Arthur Espy. (M12-C300-D7)

Rio Linda, Cal. BELL DR. Exec: Webb Amuse. Co. (M12-C600-D7)

Roseville, Cal. CITRUS HEIGHTS DR., P. O. Box 71. Exec: General Theatre Co. (M12-C550-D7)

Sacramento, Cal. FRUITRIDGE DR. Exec: Blumenfeld Ct. (M12-C848-D7)

Sacramento, Cal. SKYVIEW DR. Exec: Antone Martines. (M12-C550-D7)

Salida, Cal. MODESTO MOTOR IN, Hwy. 99. Exec: Robert L. Lippert Ct. (M12-C448-D7)

Salinas, Cal. AUTO MOVIES, East Market and Simas Sts. Exec: Frank Lucido Ct. (M12-C500-D7)

Salinas, Cal. SKYVIEW DR., Sanborn Dr. Exec: Antone Martines. (M12-C650-D7)

San Francisco, Cal. GENEVA DR. Exec: Bay City Amuse. Co. (M12-C725-D7)

San Jose. Cal. ALUM ROCK DR., Santa Clara at 37th St. Exec: Andrew J. Sasso. (M12-C500-D7)

San Jose, Cal. EL RANCHO DR., Alma and Almaden. Exec: Paul R. Catalana and Arthur Yarmie. (M12-C507-D7)

San Jose, Cal. MOONLIGHT MOVIES. Exec: Michael Naify, T. and D. Jr. Enterprises Ct. (M12-C1000-D7)

San Jose, Cal. SAN JOSE DR. Gish Rd. and Oakland, Hwy. 17. Exec: Gannon Bros. (M12-C600-D7)

San Jose, Cal. SHAMROCK DR. Exec: Shamrock Amuse. Co. (M12-C700-D7)

San Leandro, Cal. OAKLAND DR., 15065 E. 14th St. Exec: David Bolton. (M12-C713-D7)

San Leandro, Cal. STADIUM AUTO MOVIES, 16501 E. 14th. Exec. Golden State Th. Ct. (M12-C826-D7)

San Mateo, Cal. 19th AV. DR. Exec: 19th Av. Dr. Th., Inc. (M12-C770-D7)

San Pablo, Cal. RANCHO DR. Exec: Guy Meeks. (M12-C560-D7)

San Rafael, Cal. MARIN MOTOR MOVIES, San Quentin Rd. Exec: Joe Blumenfeld, Blumenfeld Enterprise Ct. (M12-C500-D7)

Santa Cruz, Cal. ENCINO DR. Exec: Trans-Calif. Theatres Ct. (M12-C400-D7)

Shafter, Cal. DEL KERN DR. Exec: Panero Ct. (M12-C375-D7)

South San Francisco, Cal. STARLITE DR. 30 S. Linden Ave. Exec: Trans-Calif. Theatres Ct. (M12-C580-D7)

Stateline, Cal. TAHOE DR., Hwy. 40. Exec: William Garren. (M6-C300-D7)

Stockton, Cal. 99 DR., R. R. #2, P. O. Box 1283. Exec: Michael Naify, T. and D., Jr. Enterprises Ct. (M12-C750-D7)

Stockton, Cal. STOCKTON MOTOR MOVIES, Clayton Ave. and Hwy. 50. Exec: Blumenfeld Ct. (M12-C887-D7)

Susanville, Cal. LASSEN AUTO MOVIE. Exec: T & D, Jr. Enterprises. (M12-C350-D7)

Tracy, Cal. SHOW BOAT DR. Exec: Show Boat Th. Corp. (M12-C500-D7)

Twainharte, Cal. AMERICAN LEGION OPEN AIR. Exec: D. L. Finney, adjutant. (M12-C500-D7)

Ukiah, Cal. STATE DR. Exec: Redwood-Midland Th. (M12-C465-D7)

Vallejo, Cal. CRESCENT DR., County Rd. off Hwy. 29, P. O. Box 266. Exec: Western Dr. Th. (M12-C640-D7)

Vallejo Cal. VALLEJO MOTOR MOVIES. Exec: Syufy Entr. (M12-C850-D7)

Visalia, Cal. SEQUOIA AUTO THEATRE. Exec: Exeter Amuse. Corp. (M12-C500-D7)

Visalia, Cal. TULARE MOTOR IN. P.O. R.R. 6, Box 403. Exec: Robert L. Lippert Ct. (M12-C485-D7)

Watsonville, Cal. STARLITE DR. Exec: Pacific States Amuse. (M12-C637-D7)

West Sacramento, Cal. EL RANCHO DR. Exec: Blumenfeld Ct. (M12-C600-D7)

Williams, Cal. SUNDOWN DR. Exec: Ned Steel, Jr. (M12-C300-D7)

Woodland, Cal. SUNSET DR. Exec: P. Garrette. (M12-C390-D7)

Yuba City, Cal. TWO CITIES DR., 935 Market St. Exec: Guy Meeks. (M12-C600-D7)

Nevada

Reno, Nev. MIDWAY DR. Hwy. 395 and S. Virginia Rd. Exec: Floyd Bernard. (M5-C250-D7)

Reno, Nev. EL RANCHO DR. Exec:* (M5-C* -D7)

Oregon

Klamath Falls, Ore. SHASTA DR. Exec: Redwood-Midland Ct. (M9-C600-D7)

SEATTLE TERRITORY

Idaho

Lewiston, Ida. AUTO VUE DR. Hwy. 99. Exec: Mildred Wall, Liberty Theatre Corp. (M7-C450-D7)

Lewiston, Ida. NATURVUE DR. Exec: L. Daugherty. (M7-C350-D7)

Moscow, Ida. AUTO TH. Exec: E. H. Metzgar. (M7-C465-D7)

Washington

Aberdeen, Wash. HARBOR DR. Exec: Wm. Forman. (M7-C380-D7)

Alderwood Manor, Wash. SNO KING DR., Hwy. 99. Exec: C. J. Rockey, 4534 - 14th Ave. S., Seattle 8. (M7-C650-D7)

Bellingham, Wash. MOTOR VUE DR. Hwy. 99. Exec: Larson and Gillette. (M7-C450-D7)

Bremerton, Wash. RODEO DR. Belfair Hwy. Exec: Rodeo, Inc., P.O. Box 898, Port Orchard. (M8-C600-D7)

Centralia, Wash. TWIN CITY DR. Exec: Gamble Bros. (M7-C500-D7)

Fife, Wash. FIFE DR. Exec: Wm. Forman. (M7-C450-D7)

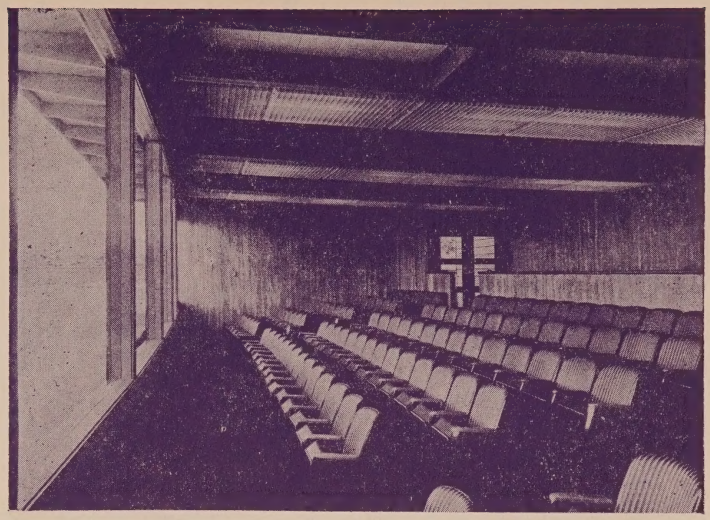
Kennewick, Wash. HI LAND DR., Hwy. 410. Exec: Midstate Amuse. Corp., P.O. Box 398, Walla Walla. (M7-C600-D7)

Kennewick, Wash. PARK IN, Hwy. 410. Exec: F. M. Higgins, Higgins Amuse. Co., Seattle. (M7-C425-D7)

Midway, Wash. MIDWAY MOTOR IN, Hwy. 99. Exec: Ed Johnson, Spokane. (M12-C500-D7)

Millwood, Wash. MOTOR IN, Hwy. 53. Exec: Lowell Thompson Motor-in Theatres. (M6-C750-D7)

Olympia, Wash. SUNSET DR. Hwy. 99. Exec: Johnson & Spracher. (M7-C480-D7)



A SMARTLY STYLED RAMP HOUSE is a notable addition to the facilities of the El Rancho Drive-In, San Jose, Calif. The 163 Heywood-Wakefield chairs are covered with Lumite upholstery fabric. BELOW: The Skyline Auto Theatre, Morenci, Mich., features a specially designed Wagner Steel Panel Assembly.

Omak, Wash. VALLEY DR. Hwy. 97. Exec: A. J. Varrelman. (M7-C200-D7)

Othello, Wash. SUNSET DR. Exec: C. Fintbeiner. (M8-C115-D7)

Seattle, Wash. AURORA MOTOR IN, Hwy. 99. 13500 Aurora Ave. Exec: Wm. Forman. (M12-C500-D7)

Seattle, Wash. DUWAMISH DR., Hwy. 99. Exec: William Forman, United Theatres, Inc., Smith Tower Bldg. (M8-C700-D7)

Seattle, Wash. SUNSET DR. Exec: Sterling Th. (M7-C800-D7)

Spokane, Wash. AUTO VIEW, 112th So. and Hwy. 195. Exec: C. Young. (M6-C400-D7)

Spokane, Wash. EAST SPRAGUE DR., Sprague Ave. Exec: Joseph Rosenfield, N. 226 Post St. (M8-C600-D7)

Sunnyside, Wash. STARLITE DR. Exec: Fay Honey. (M7-C400-D7)

Tacoma, Wash. AUTO VIEW DR. McChord Field, Hwy. 99. Exec: William Forman, United Theatres, Inc., Smith Tower Bldg., Seattle. (M8-C600-D7)

Tacoma, Wash. STAR LIGHT DR., Hwy. 99. Exec: Wm. Forman. (M8-C500-D7)

Toppenish, Wash. TOP-HI DR. Exec: E. A. Darby. (M7-C300-D7)

Union Gap, (Yakima) Wash. TOWER DR. Hwy. 97. Exec: Midstate Amuse. Corp. (M7-C425-D7)

Walla Walla, Wash. SKY VUE DR. Hwy. 410. Exec: Midstate Amuse. Corp., P.O. Box 398. (M7-C400-D7)

Wenatchee, Wash. AUTO VUE, Hwy. 10, P.O. Box 57. Exec: Charles Grieme, Grieme and Fasken. (M6-C250-D7)

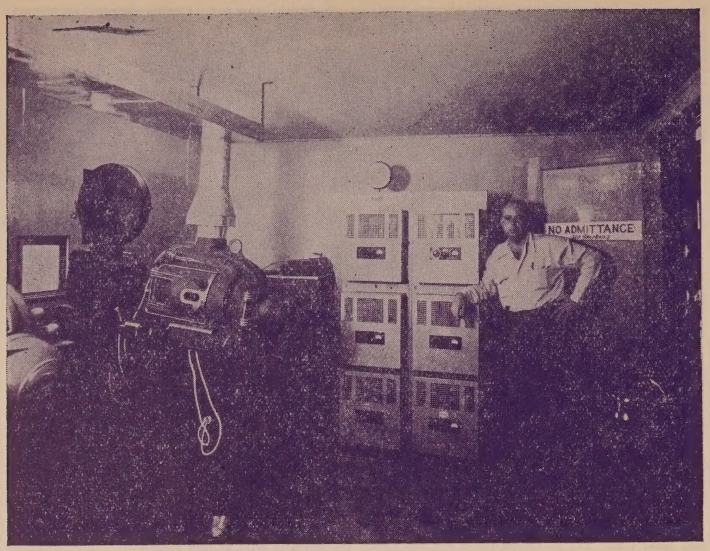
WASHINGTON TERRITORY

Maryland

Baltimore, Md. NORTH POINT DR., North Point and Battle Grove Rds. Exec: Frank H. Durkee, Jr., Durkee Enterprises Ct. (M8-C600-D7)

Baltimore, Md. NORTHWOOD DR. Exec: J. C. Grant. (M8-C1144-D7)

Beltsville, Md. SIDNEY LUST DR., Rt. 1. Exec: Sidney Lust Ct., 711 - 14th St., N.W., Washington, D.C. (M9-C625-D7)



INSTALLED IN THE COMPACT PROJECTION BOOTH of the Sunset Drive-In, Brunswick, Ga., are Motiograph projectors and sound system. Installation was by Wil-Kin Theatre Supply, Atlanta.

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Virginia

Abingdon, Va. MOONLITE DR., Rt. 2. Exec: T. D. Field. (M6-C400-D7)

Alexandria, Va. MOUNT VERNON OPEN AIR, Rt. 1. Exec: E. M. Loew Ct., Boston, Mass. (M8-C750-D7)

Alexandria, Va. VIRGINIA DR., Baileys Cross Roads. Exec:* (M8-C* -D7)

Alta Vista, Va. HIGHWAY DR. Exec: English Theatre Co. (M9-C350-D7)

Arlington, Va. AIRPORT DR., 2001 Jefferson Davis Hwy. Exec: Paul J. Foley. (M7-C1000-D7)

Bailey's Cross Roads, Alexandria, Va. SUNSET DR., Leesburg Pike, Rt. 7. Exec: Henry Wilson, 6500 Carlyn Court, Falls Church. (M7-C300-D7)

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Suffolk, Va. PLANTATION DR. Exec: Cecil Houck. (M8-C500-D7)

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Septic Tank Systems for Drive-Ins

The Functional Requirements for an Ideal Type Of Sewage Disposal Are Studied With Recommendations

By GEORGE M. PETERSEN
Drive-In Theatre Consultant and Designer

BRIEF: *The importance of adequate sanitation to sound drive-in operation cannot be unduly emphasized . . . without it, the exhibitor may well find himself plagued by a series of evils . . . including backed-up toilets, frightful odors, and the possibility of a contaminated water supply . . . to say nothing of infuriated patrons and revengeful health authorities.*

Such nightmares may . . . however . . . be avoided by the installation of an efficient septic tank system . . . widely deemed to be the most suitable kind of sewage disposal method for drive-ins . . . A good tank installation . . . coupled with a simple filter bed and a bit of intelligent maintenance on the part of the operator . . . should fulfill all of the theatre's sanitary needs.

Since these is a great lack of knowledge among outdoor theatremen in regard to septic tank systems . . . the Editors of THEATRE CATALOG called upon a well-known expert on drive-in operation for his authoritative views on the subject . . . Based on years of seasoned experience, his discussion covers such topics as: operation . . . location . . . construction and design . . . size requirements . . . maintenance . . . advantages over cesspool . . . distribution box . . . filter bed . . . and dry well.

One of the most notable problems of drive-in operation is that of sanitation. Unlike roofed houses, outdoor theatres cannot usually depend on municipal facilities for water supply and sanitation, for they are generally situated in locations that are rather remote from regular sewer systems. Although this sewage disposal problem is one which confronts all drive-ins, it has become increasingly complicated with the construction of larger theatres with capacities of 2,500 to 3,000 patrons.

The most practical and satisfactory method of sewage disposal for a drive-in theatre lies in the use of a septic tank to receive the raw sewage material and some sort of subsurface filter bed to distribute the effluent from the tank.

Operation

Strictly speaking, a septic tank is actually a sedimentation tank in which the sludge is retained for a long period of time, during which it undergoes decomposition. The action of the gas bacilli, frequently termed "maggots," causes the gas-lifted particles of sludge to be raised to the surface of the liquid. In this method of sewage treatment it has been found that only a small amount of sludge collects on the bottom of the tank after it has been in operation for many months, so that it is only necessary to remove the deposit at two or three-year periods.

To facilitate decomposition of the sludge it is of vital importance that no surface, soapy, or greasy water be permitted to enter the septic tank. If it is necessary to convey any of these liquids to the filter bed, they should be piped past the septic tank and enter the sewer line on the outlet side of the tank.

Location

The design of any individual sewage disposal system must take into consideration location with respect to wells or other sources of water supply, topography, water table, soil conditions, area available, and the maximum occupancy of the building served. Adequate plans should be made at the time the theatre is built to erect rest rooms in a location that will be readily accessible to all patrons and suitable for a septic tank system installation.

The septic tank should, furthermore, be located where surface drainage from the site is away from all sources of water supply. The elevation of the tank should be such as to allow sufficient fall in the building sewer lines and proper grading of all lateral lines in the filter bed, thus permitting all field lines to be constructed without excessive cover.

Since septic tanks are usually made of concrete or steel, and the effluence from the tank is, or should be, conducted to the filter bed by means of caulked joints, there is no possible manner in which a well for drinking water can be contaminated. Therefore, the septic tank is usually placed in close proximity to the fixtures that will drain into it. Caution should be exercised, however, in seeing to it that surface drainage from around the tank site will not reach the vicinity of the water supply.

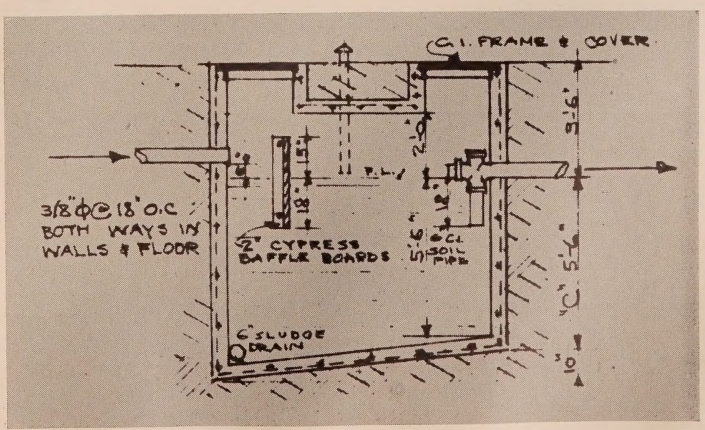
Where buildings have no basement fixtures or are constructed without basements, as is usually the case with drive-in rest rooms, the building drain should be held to an elevation which will permit the tank to be installed without excessive cover. Contemplated finish grades about the building should likewise be checked, so that the top of the tank will not be buried more than 12″ to 18″ below the surface. In cold climates, if topography permits, the tank may be placed at a greater depth to prevent freezing.

Finally, the location should permit easy access for inspection and cleaning. Low swampy areas or areas which may be subjected to flooding must be avoided. The fact that the tank has, or should have, a reinforced concrete top slab covered with an earth cushion at least one foot thick protects it from damage by overhead traffic, so that its location need not be controlled because of this factor.

Construction and Design

Septic tanks should be constructed of materials not subject to excessive corrosion or decay. Prefabricated tanks may be acceptable if they embody the recommended features of design and capacity. In many instances, multiple units constructed of sections of large sewer or drain pipe have been installed to meet the capacity requirement. However, as such tanks do not provide for adequate settling or furnish sufficient sludge storage capacity, they are not recommended.

FIGURE 1 Sectional drawing of a recommended septic tank.



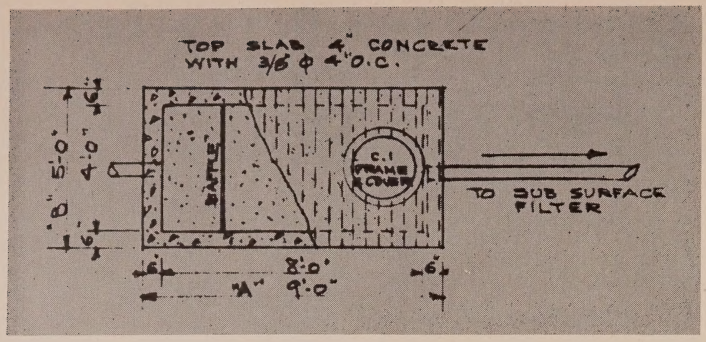


FIGURE 2 Plan drawing of a recommended septic tank.

Metal tanks should be at least 12 gauge and should be coated or treated to prevent excessive corrosion. Where the coatings of metal tanks have been damaged, the tanks should not be used unless the coating is restored.

All tanks should be designed to allow the sewage to enter at one end, have a slow uniform horizontal flow through the tank, and discharge the liquified sewage at the other end with the least possible disturbance of the contents. Tanks should be designed with a length not less than two, or more than three, times the width and with a minimum depth of four feet.

As seen in Fig. 1, there is little need for a multiplicity of partitions, baffle walls, or connecting pipes from various chambers. Such construction adds to cost and often reduces the efficiency of the tank by decreasing sludge storage capacity and increasing the velocity of flow through the tank, thus interfering with sedimentation.

Baffles should extend a reasonable distance below the liquid level, project at least 6" above the flow line, and be spaced far enough away from the ends of the tank. The invert of the inlet should be somewhat elevated above the invert of the outlet.

In the lower left-hand corner of Fig. 1, an item indicated as 6" Sludge Drain will be noted. This drain is connected to a 6" gate valve which is frequently located in a small well deeper than the drain. At such infrequent preiods as the septic tank may require cleaning, a pail is lowered into position under the outlet from the gate valve; the valve is then opened by a key attached to a long iron rod, and the sludge is removed.

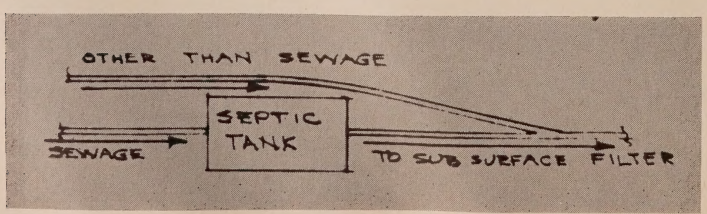
With further reference to Fig. 1, the reader will note a small hooded vent protruding through the top of the concrete slab. Since the efficient operation of a septic tank depends on the gas bacilli that attack the solid matter until it disintegrates and decomposes, there is a wide belief that fresh air is fatal to the bacilli and should not, therefore, be admitted to the tank while it is in operation.

On the other hand, the gas caused by the decomposition of the solid matter must be allowed to escape, or an explosion may occur. Therefore, in order to permit the escape of the gas, without allowing fresh air to enter the decomposition chamber, the aforementioned vent is installed. Many tanks are designed without this vent on the theory that the gas will escape through the discharge outlet with the effluent. If the filter bed is properly vented, the foregoing theory is workable, but if vents have not been provided, the accumulated gas may often cause a blow-up.

The septic tank cover or slab (see Fig. 2) should be designed for a dead load of not less than 150 pounds per square foot. When constructed of concrete, the slab should be reinforced and at least 4" thick. As stated previously, it should be covered with an earth cushion at least one foot thick to protect it from traffic overhead. The tank slab should provide a watertight cover for the tank, and, when constructed in one piece or monolithically with the tank, it should have at least one manhole. Sectional slab covers may also be used, but in doing so great pains must be taken to make sure that no surface drainage or ground water can seep into the system.

Fig. 3 shows how waste from the concession stand is made to bypass the septic tank. As stated previously, no surface, soapy, or greasy water should be permitted to enter the septic tank. This problem, as seen in the drawing, may easily be surmounted by running a separate connection from the refreshment stand to the filter bed.

FIGURE 3 Recommended method for by-passing the tank.



Size Requirements

In spite of the fact that in the majority of states all sewage disposal systems must be approved by the state or local health authorities, comparatively few states have an effective code covering this vital part of drive-in construction. As a result, either the authorities require a system that is far in excess of actual requirements, or plans are approved that are utterly inadequate for the purpose intended. Due to this variance in state and local regulations, it is difficult to establish design criteria for size that will be applicable in every situation without exception, but it is possible to outline broad provisions for the construction of septic tank systems in capacities which will fit both legal and other conditions generally applicable throughout the United States.

While there is some disagreement as to realistic size requirements for septic tanks to be used in drive-in theatres, it is a recognized fact that the capacities of the tanks do not increase in direct ratio to the number of cars parked. The larger the number of patrons, the smaller the percentage of persons who use the toilet facilities will be. Neither is there any factual comparison between the use of the toilet facilities in a conventional theatre and those in a drive-in. The probable reason for this situation is that patrons of conventional houses often attend the theatre after being absent from their homes for several hours, whereas drive-in patrons are seldom away from home more than three hours. This condition naturally effects the use of the toilet facilities.

At the time drive-in theatre operations were still an innovation in the entertainment field, there was considerable discussion as to the capacities of the septic tanks that should be installed, and many sanitary engineers demanded that provisions be made on the basis that every admission would make use of the toilet facilities. The falsity of this assumption was definitely proven after a few drive-ins were erected in locations available to city water supply. By checking the reading on the water meter at the start of the operating season and again at the close of the season, it was a simple matter to estimate the actual amount of water used for toilets, sprinkling, and other uses. However, as it was impossible to determine exactly the amount of water used "for other purposes," it was assumed for practical purposes that all of the water was used in the rest rooms.

The total season's consumption of water in gallons at several theatres of varying sizes was then divided by five, the normal quantity of water required to flush a water-closet. By using these figures it was then possible to obtain the approximate number of times that the toilets were used per day.

Results of this analysis, which has been used as a yardstick in the construction of many drive-in theatres, are noted in Table I.

Table I: Toilet Usage

Car Capacity	*Uses per Day*	*Average Uses per Day*
500	200-260	230
600	280-325	302
700	300-370	335
800	320-410	365
900	350-440	385
1,000	375-455	415
1,100	400-520	460
1,200	450-580	515

The method commonly used to determine the capacity of septic tanks for schools, factories, residences, etc., is to allow four cubic feet of tank capacity per person—based upon 18 hours of use and 6 hours of rest per day with multiple use by each person. Drive-in theatres, however, usually operate only three hours per day and are idle for 21 hours. There is also practically no multiple use, so we may assume that the capacities for septic tanks shown in Table II should be adequate.

Table II: Tank Capacity and Relative Dimensions

No. of Cars	*Tank Capacity gal.*	*Length*	*Width*	*Depth*
200	240	6′0″	2′6″	4′0″
300	400	7′0″	3′6″	4′0″
400	500	8′0″	4′0″	4′0″
500	760	9′0″	4′6″	4′3″
700	800	9′6″	4′8″	4′6″
900	932	10′0″	5′0″	4′8″
1,200	1,064	10′6″	5′3″	4′9″

Although the above tables and those following cannot be positively guaranteed by the writer, they have been applied satisfactorily to the design of and foundation drainage also should be prevented from entering the tank.

It is recommended that a chart be provided for all installations and placed at a suitable location to show the location of the tank and the field system. This chart also should contain brief instructions as to the inspection and maintenance required. Such a chart should assist in acquainting drive-in operators with the necessary maintenance which septic tanks require and forestall many of the failures by assuring satisfactory operation.

Advantages Over Cesspool

A cesspool (see Fig. 4) is a covered pit with open-jointed lining into which raw sewage is discharged. The liquid portion is disposed of by seepage or leaching into the surrounding porous soil, while the solids are retained in the pit and create a stench that would not be permitted within a drive-in theatre area. A cesspool is also likely to contaminate a water supply within a range of 300 feet.

A septic tank, on the other hand, holds the solid matter until it is converted into a liquid, and the effluence is then conducted into a filter bed; here the liquid is further purified and absorbed into the ground. Furthermore, since the raw sewage discharged into the cesspool tends to seal the openings in the lining of the porous formation, the leaching area is reduced and the cesspool often overflows. Thus, a cesspool is not recommended as a substitute for a septic tank under any circumstances.

However, inasmuch as waste water other than sewage should not be permitted to enter a septic tank, a cesspool may often be provided to take care of this type of waste from refreshment stand sinks, floors of buildings, etc., if regulations permit.

Maintenance

Maintenance of any septic tank will depend largely on the daily flow of sewage and the number of persons served. With ordinary use and care, cleaning of the average septic tank should be necessary only every two to three years, provided the tank has been properly designed with adequate sludge storage space. However, the tank should be inspected every 12 to 18 months, and the depth of accumulated sludge checked. When the scum accumulations and the sludge deposits reach a combined depth of 18 to 20 inches, the tank should be cleaned. Sludge should be removed in the spring rather than in the fall to avoid loading the tank with undigested solids during the cold weather months. As the sludge may contain disease-bearing bacteria, its disposal should be accomplished by burial or other methods satisfactory to the state health department. Excessive amounts of foreign substances should not be permitted to enter the tank. Rain water, surface drainage, septic tanks for more than 150 drive-in operations.

Distribution Box

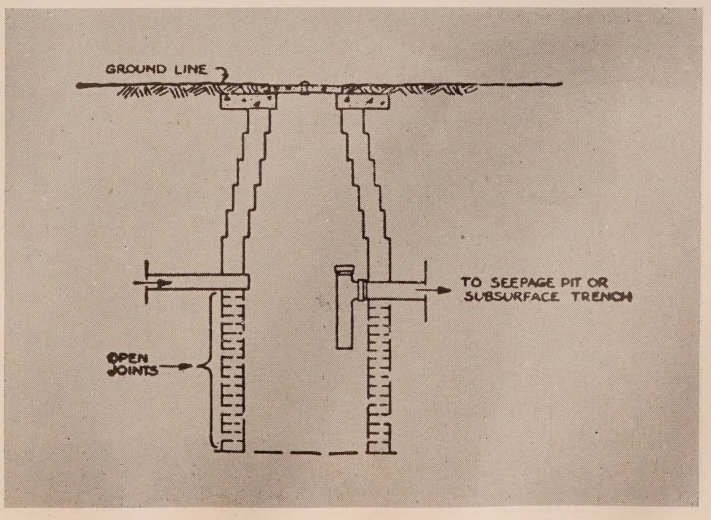
A distribution box (see Fig. 5) is a box or chamber into which the septic tank effluent may be discharged to enter subsurface field lines. As far as drive-in theatres go, it is generally applicable only in cheap installations and is not recommended. It is merely designed to regulate and equalize the flow in all lines, serve as an inspection manhole for checking the quality of effluent, and determine whether or not sludge particles are being carried out into the disposal area. It is connected to the septic tank by a short tight sewer line and is located at the upper end of the distribution field. Under ordinary circumstances, however, an efficient septic tank, in combination with a well-constructed filter bed, should obviate the need for a distribution box.

Distribution boxes get attention here only for the benefit of the reader who may hear of them and want the added information.

Table III: Filter Bed Dimensions

Car Capacity	*Length*	*Width*
500	40′	25′
600	45′	27′
700	50′	29′
800	55′	31′
900	60′	33′
1,000	65′	35′
1,200	70′	37′

FIGURE 4 Sectional drawing of a cesspool that has certain drive-in disadvantages.



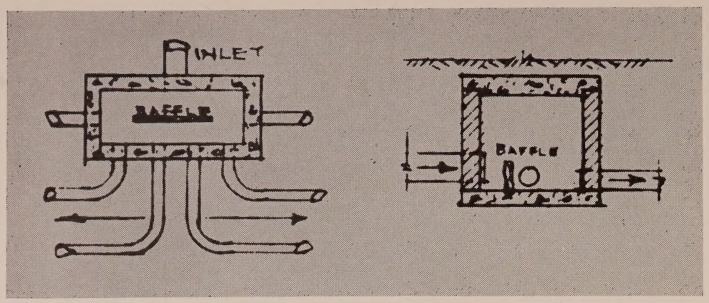


FIGURE 5 Plan and drawings of a distribution box not considered necessary to a well designed job.

Filter Bed

After the proper capacity for the septic tank has been determined, the next step is the design of the filter bed (see Fig. 6), and the dimensions shown in Table III may be used as a guide for this purpose.

The effluent from the septic tank is conveyed to the filter bed by means of 6″ cast iron sewer pipe (see Fig. 7) with all joints leaded and completely water and gas tight. The glazed tile in the filter bed is laid with open joints to permit the liquid to trickle out in small quantities at each joint. It then seeps through the sand filter (see Fig. 8) and is picked up by the underdrains to be conveyed into the lateral drains, from which it is dissipated into the earth. These lateral drains are usually of porous clay tile and are frequently called French drains or agricultural tile. These tiles may be laid with butt joints left slightly open and wrapped with burlap to keep dirt and other extraneous matter from entering and hampering the flow of water.

The number of feet of lateral drains required in any particular theatre is determined by the capacity of the septic tank, the size of the filter bed, and the texture of the subsoil. However, the total estimated lengths of these agricultural tile laterals will run approximately as shown in Table IV.

Incidentally, while the septic tank itself should be located close to the fixtures it is to service, the filter bed should be situated outside of the ramp area to prevent crushing of the clay tile.

FIGURE 6 Plan of a sub-surface filter bed.

Table IV: Size of Lateral Drains

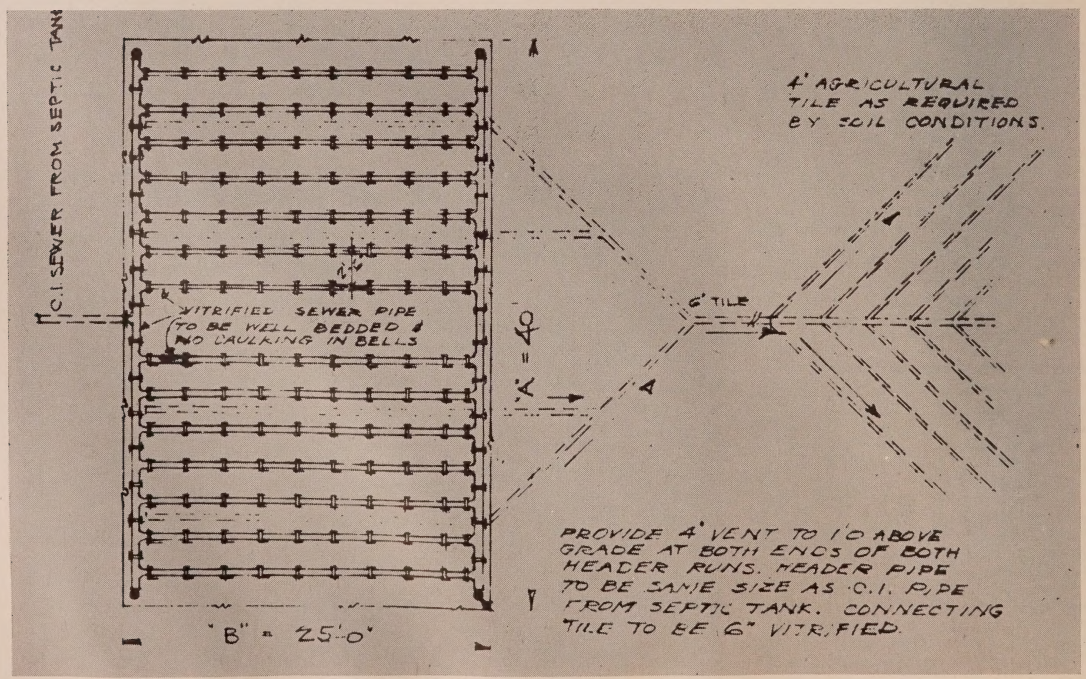
Car Capacity	*Sandy Soil Lin. Ft.*	*Medium Soil Lin. Ft.*	*Clay Soil Lin. Ft.*
500	600	800	1,500
600	665	920	1,650
700	725	1,025	1,800
800	787	1,080	1,950
900	850	1,150	2,100
1,000	912	1,225	2,250
1,200	975	1,300	2,400

Dry Well

A dry well (see Fig. 9) is a covered pit with open-jointed lining through which drainage from roofs, floors, or other areaways may seep or leach into a surrounding porous soil. Particularly recommended for use in drive-ins where the soil is of a very sandy nature, the dry well is intended to eliminate non-sewage wastes from the septic tank and subsurface drainage system. It should never be used for the disposal of septic tank effluent on sites where a well is used for water supply.

Dry wells should be located at least 50′ from any source of water supply, 20′ from any disposal field, cesspool, or seepage pit, and at least 10′ from building foundation.

Two types of dry wells may be considered: Small pits serving individual drains, and large pits receiving roof drainage from an entire building. Where a single pit is provided to serve a floor or areaway drain, it may be constructed by using a 3′ length of 15″ or 18″



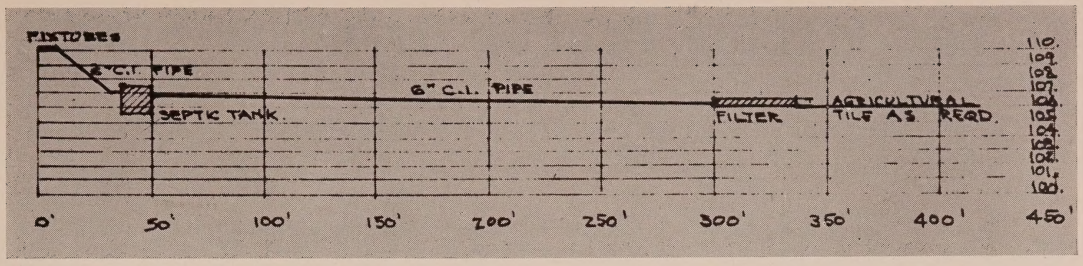


FIGURE 7 Profile drawing of a septic tank and its relating filter bed.

diameter vitrified clay or cement pipe, provided a reasonably coarse foundation is encountered at the 3' depth. This tile is filled with coarse gravel or crushed stone, thus providing sufficient voids to receive a quantity of water before overflowing, and permitting the water to leach out of the bottom into the soil.

The large dry wells are similar in size and construction to seepage pits. In many instances, however, the pits are not curbed but are entirely filled with very coarse gravel or broken stone. Where it is not practicable to use one pit for all downspouts, individual pits may be provided for each downspout. The pits should be of ample size for the amount of water they may receive at any single period. The dry wells should have a solid concrete slab cover and be constructed so as to prevent the entrance of surface drainage from the surrounding soil. Dry wells should not be provided for roof drainage where surface discharge is feasible.

Conclusion

There are many alternative methods of sewage disposal, but the septic tank system described above is undoubtedly the most efficient, reliable, and the one most widely accepted for the purpose since 1916 when the patent rights expired. It is hoped that the data contained in the foregoing discussion will aid outdoor exhibitors in setting up septic tank systems which will yield years of faithful service.

As a final word of warning, however, it should again be repeated that any drive-in operator planning to install a septic tank system in his theatre would do well to consult with health authorities to make sure that all legal requirements are met. In addition, it is often wise to obtain the services of an experience sanitary engineer whose valued advice will assure a system that is satisfactory from every point of view.

* * *

Acknowledgment

The Editors of THEATRE CATALOG wish to express their gratitude to the Municipal and Rural Branch, Division of Sanitation, U. S. Public Health Service, as well as to Mr. Petersen, for its generous cooperation in supplying some of the material contained in the above article.

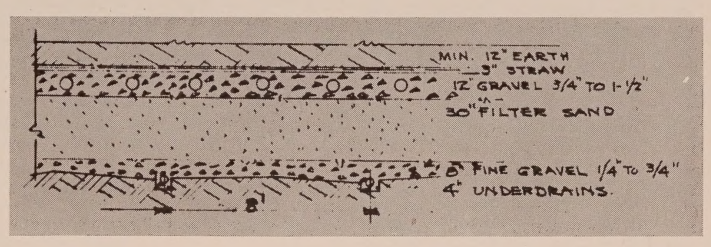


FIGURE 8 Sectional drawing through a sub-surface filter.

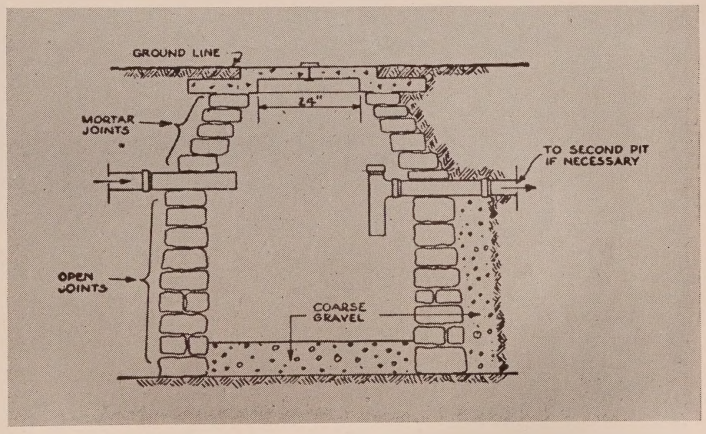


FIGURE 9 Sectional drawing of a dry well.

GOOD INITIAL CONSTRUCTION will minimize later maintenance and repair costs. At the Starlyte, Medford, Oregon careful attention was given to drainage, sub-soil, and top dressing, while the theatre was in the plan stages and best building practices followed. As a result, only normal maintenance procedures will suffice in the years ahead.

The Martin Prefab Drive-In Plan

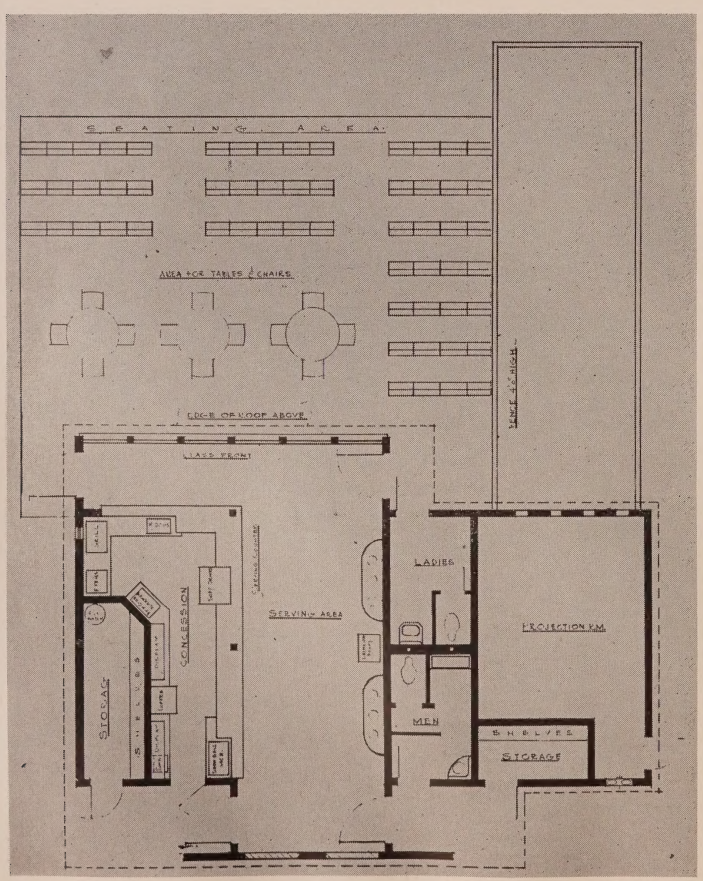
How a Southern Circuit Produced and Constructed An Amazing Total of 20 Complete Units in a Few Months

By C. L. PATRICK
General Manager, Martin Theatres, Inc.

When drive-ins really became popular shortly after the end of World War II, we built outdoor theatres in the larger towns in the areas where the Martin circuit operates. It was originally estimated by exhibitors throughout the country that it would take a town with about 100,000 people or more in a trade territory to support a drive-in, but these estimates began to drop rapidly down to 50,000, then 40,000, and finally 25,000.

After our construction plans had been completed for the larger towns, it even became apparent that drive-ins could be operated successfully in towns of less than 25,000 population, provided the costs of construction were greatly reduced. In the light of this new line of thinking, we were confronted with the problem of building 20 more smaller drive-ins near towns where we already had established indoor theatres. Our original drive-ins had been built on an individual basis and cost from $200.00 to $400.00 per car, so we knew that the completion of 20 more on the same basis would entail a long, drawn-out, expensive construction program. Our aim was to build drive-ins in the smaller towns with a capacity of 300 to 500 cars, not as showcases, but as good functional theatres, properly engineered and well equipped, but without unnecessary frills and expensive construction.

PLAN OF THE CONFECTION AREA fits well into the necessary Projection and Toilet Room areas. All share a common roof and are equipped with adequate storage spaces. Accent is on functional use and economy.



The Prefab Plan Is Born

Our designer, R. E. Bland, conceived the idea of setting up a prefabrication plant to prefabricate all the buildings of the drive-ins and some of the equipment in accordance with one set pattern. Acting on his suggestion, our real estate department was instructed to acquire the necessary property in each town and run topographical surveys while the prefabrication plant was being tooled up. The tooling-up process, which took about one month, followed designs laid out by Bland. Luckily, we owned an old cotton mill in Phenix City, Ala., which contained approximately 40,000 sq. ft. of empty floor space and served our purpose perfectly.

Although our immediate requirements were for only 20 drive-ins, we planned to run through five "spares," or a total of 25; it was thought that the extra five might later be installed in other towns, where the advisability of building drive-ins had not yet been fully determined, or erected as second outdoor theatres in some of the larger towns where we already had one.

General Plant Operations

Detailed engineering drawings for each drive-in, taking into consideration such factors as terrain, highway approaches, etc., were made, and from these plans were set up saws, drills, and jigs with which materials could be cut all the same size, put together in panels, and num-

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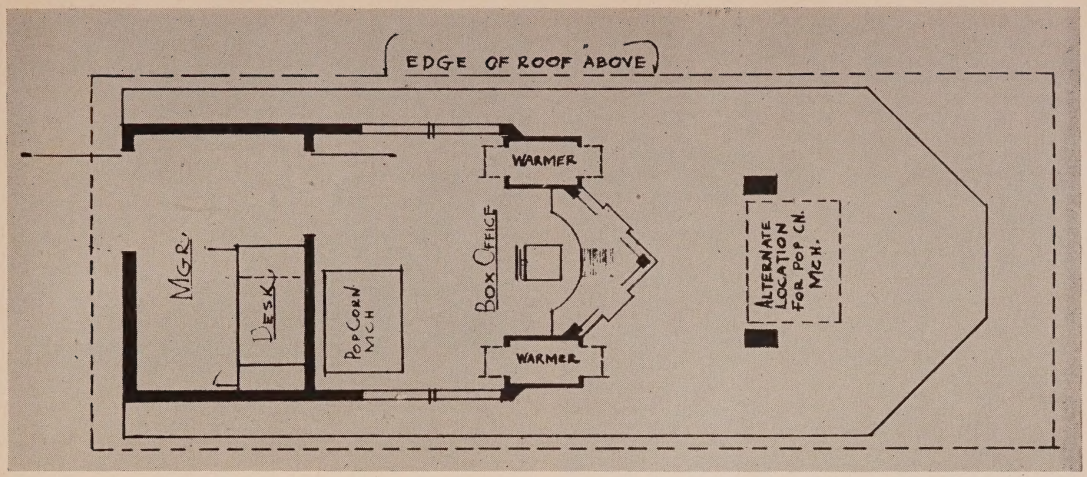
BRIEF: *Incredible though it may seem, Martin Theatres, Inc. . . . a well-known circuit operating 130 theatres . . . located in Georgia, Alabama, Florida, and Tennessee . . . of which 33 are drive-ins . . . developed and put into operation . . . during 1950 . . . an ingenious plan whereby they were able to turn out . . . and erect . . . 20 fully equipped drive-ins in a matter of weeks.*

Nearly every type of building and accessory . . . from boxoffices to ramp markers . . . were prefabricated in a special plant . . . closed down after it had served its purpose . . . In addition to the 20 outdoor theatres actually put up, five "spares" were also produced . . . with an eye to future installations . . . Crews . . . especially trained for their respective functions . . . erected the prefab drive-ins with phenomenal rapidity.

The text below relates how the idea came into being . . . plant operations . . . the design of specific parts . . . and the novel erection process.



PLAN OF THE BOXOFFICE is efficient for the handling of two traffic lanes by one cashier and two car hops. It is interesting to note the convenient manager's office, the built-in popcorn warmers, and the alternate locations for the popcorn machine dependent on weather conditions and traffic load.

bered to enable rapid assembly on the job site. Salt-treated lumber and tempered masonite were chosen for the main part of the construction, and the saws were designed to cut up to 15 sheets of the latter at one time. The finished panels were marked, numbered, and stored for shipment to the job site.

The boxoffice buildings (which include the manager's office, desk, and file cabinets), concession stands, projection booths, attraction signs (including storage room for changeable letters), screen towers, and the power cut-in station were all prefabricated. We also made our own letters for the attraction boards, advertising frames, all cabinets and counters for the concession buildings, and all fence posts were cut and holes drilled in the plant. Ramp markers, directional signs, exhaust vents for the projection machines, and other miscellaneous items were produced in our tin shop. All of the above pieces were completed in the plant and shipped out to the theatre site as one unit.

Screen Tower Design

The screen towers were designed in three sections, which were completely bolted together on the ground and pulled up into place individually by a light motor crane at the job sites. The roofs on all the buildings were a steel Q-deck type, cut according to our specifications by the manufacturer. This type of roof is designed to cover long spans and to support its own weight.

Screen surfaces were constructed of tempered masonite with the rough side out. While we were aware that transite board would have made better screen surfaces, the masonite was much easier and faster to handle as well as more economical for our purpose. Since the masonite used for the screen surfaces received one coat of paint in the prefab plant before shipment to location, it was only necessary to apply one coat of paint at the site before erection, thus speeding up the construction process.

Boxoffice Plan

Falling back on experience gained in operating other drive-ins, we designed the boxoffices with "V" shape fronts to sell tickets on two sides. Popcorn warmers were built into the wall with doors both inside and outside on each side of the glass-enclosed cashier's cage. The popcorn operator places the popcorn boxes into the warmer from the inside of the building, and they are removed through the other door on the outside of the building by the car attendant. The popcorn machine may be located either inside or outside of the boxoffice, depending on the weather.

The attraction boards were indirectly lighted with a panel opening on each side containing five tracks 20′ in length capable of holding 12-inch letters. Storage space for the letters was built right into the attraction signs.

Concession Stand Design

The concession buildings, located in the center of each theatre area, were constructed of adjoining masonite panels. The panels were designed so that the buildings could be raised or lowered 15″ to fit the individual situation and insure a proper view of the screen. Each concession building and projection room are under the same roof and separated by a breeze-way. The refreshment area is open to the screen and has counter space across the front and down one side. The fronts of the concession stands are encased with glass across the top with removable panels at the bottom which can be taken off for ventilation during the summer months. Separate counters for salt, pepper, mustard, dressing, pickles, etc., are set up on the opposite side of the breeze-way across from the service counter, so that valuable space will not be taken up by customers dressing sandwiches, hot dogs, etc., after sales have been made.

Through many experiments and tests at our other drive-ins, we had already decided on exactly what was to be sold at the concession stands and how the cabinets and counters should be designed for peak efficiency under a "station" system type of operation. We used one type of equipment in all of the 20 drive-ins, including grills, steam tables for hot dogs and buns, drink machines, etc. Since one kind of equipment is used throughout the entire circuit, our maintenance department can stock the necessary parts to make immediate repairs on any piece of equipment in the event of a breakdown.

Construction and Erection

In constructing and erecting the prefabricated drive-ins, four teams were set up to do the work:

Team No. 1 was the grading crew. Arrangements were made with a grading contractor who had plenty of equipment to do the entire project. This crew was, of course, the first on the job site, after the engineering had been completed, to do all of the grading, set up the ramps, etc. A portion of this crew came in later to handle the surfacing and other matters, once construction had reached the proper stage.

Team No. 2 poured the foundations, concrete floors, etc., for the buildings and set the foundations for the screen tower. This group included a plumber and an electrician who laid underground pipe and conduit and "roughed in" the plumbing.

Team No. 3 actually set up and assembled the prefabricated buildings, including the screen tower.

Team No. 4, the finishing crew, painted the buildings, the screen tower, and did the decorating as well. The various buildings and structures were given separate treatments in painting, for example, in each location.

Our engineering department coordinated their electrical work and equipment installations with the work of the aforementioned teams. The crews coordinated very well during the construction period, except, of course, during spells of bad weather, when certain ones were unable to work; thus, some unavoidable "lost motion" resulted.

It was not our intent to see how fast we could put up one drive-in theatre, but, rather, how quickly we could build 20. We started to design and set up the prefabrication plant on February 15, 1950, and on April 24, 1950, our first drive-in was opened to the public. The following drive-in theatres were constructed and in operation by July 31, 1950:

Azalea .....Bainbridge, Ga.
Bama .....Eufaula, Ala.
Bel-Air .....Calhoun, Ga.
Cadet .....Milledgeville, Ga.
Camellia ....Greenville, Ala.
Cherokee ...Dalton, Ga.
Eagle .....Brewton, Ala.
Fendley ....Andalusia, Ala.
Jem .....Montezuma, Ga.
M & T .....Canton, Ga.
Melody .....Thomson, Ga.
Palms .....Escambia County, Fla.
Phenix .....Phenix City, Ala.
Starlight ...Cartersville, Ga.
Sunset .....Americus, Ga.
Twi-Lite ....Roanoke, Ala.

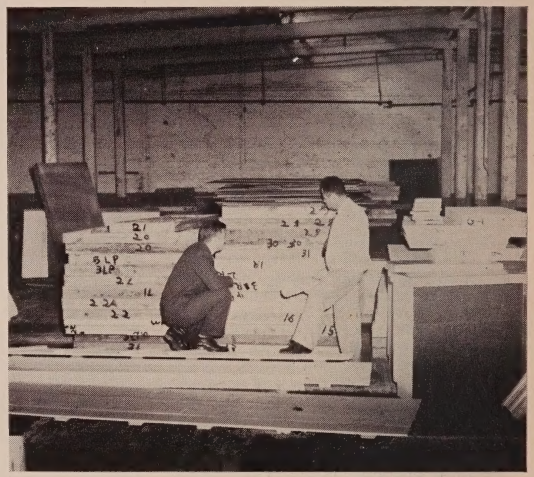
We later completed the Iris Drive-In, Griffin, Ga., the Fair Oaks Drive-In, Marietta, Ga., and remodeled drive-ins in Columbus and Fitzgerald, Ga., using the prefabricated buildings.

It was originally planned to open one drive-in per week until the program had been completed, but this was impossible because of bad weather. Some weeks we were unable to open any, and in others we opened two. The record construction time was set at the Bel-Air Drive-In, Calhoun, Ga., where the theatre was opened approximately 28 days after grading first started.

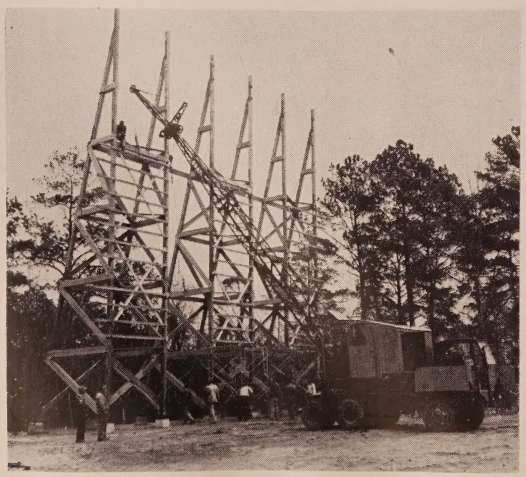
Conclusion

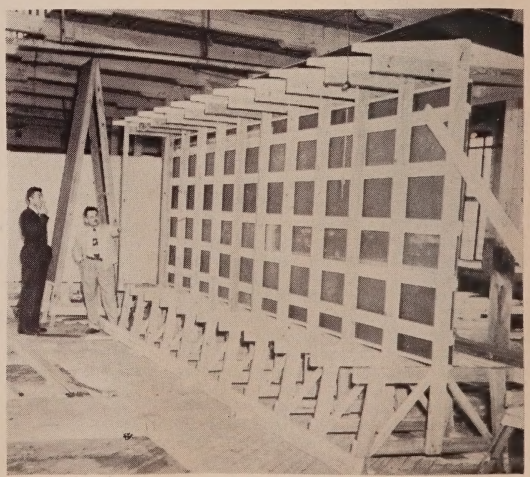
We feel that our prefabrication plant was highly successful because otherwise we could not possibly have constructed 20 drive-ins on an individual basis and had them operating in a matter of a few weeks. Our prefab drive-ins cost between $100.00 and $150.00 per car, depending upon the type of surfacing used in each location. When all facts are considered, we are quite well pleased with the results of our prefab plan, especially in view of the current restrictions on amusement construction, which would have prohibited us from building in many, many locations, if we tried to build all 20 drive-ins on an individual basis, because of the time element involved.

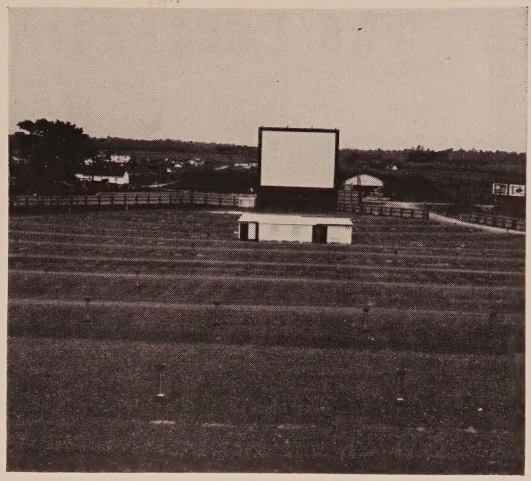
Another advantage lies in the fact that the prefabs were designed so that they may be readily moved to another location, if desired, with a minimum of expense and effort. To date, we have encountered no serious maintenance problems whatsoever on our buildings, so it appears that our prefab plan was a sound one from this point of view also.



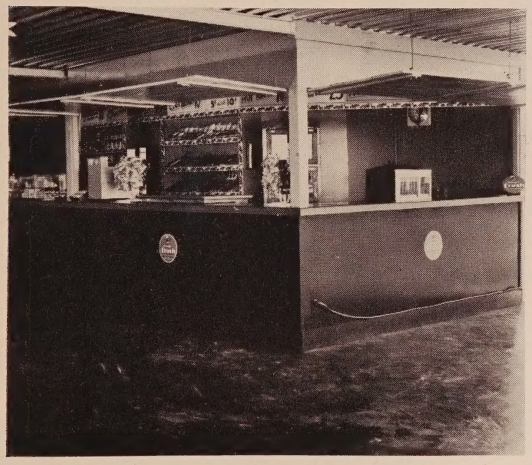
THE PRE-FAB PRODUCTION LINE was located in an old cotton warehouse that provided ample open areas. Top, left: Finished panels for buildings coming off the production line for numbering and later assembling as complete units. Top, right: Panels for one complete confection—projection building labeled and ready for shipment. Lower, left: Setting up sections of screen tower which were precut at the factory and completely bolted together on the ground. Lower, right: First "pilot" attraction board to come off the line is assembled in the plant for examination and inspection.

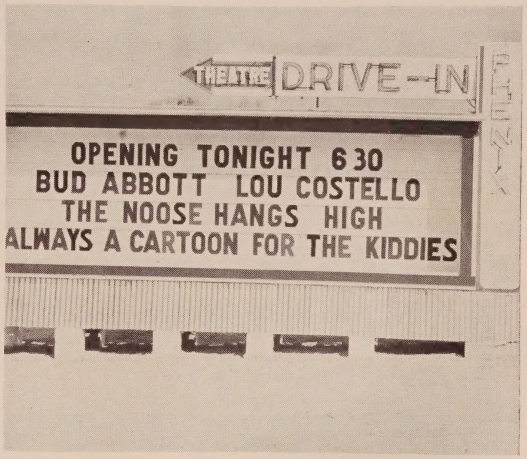


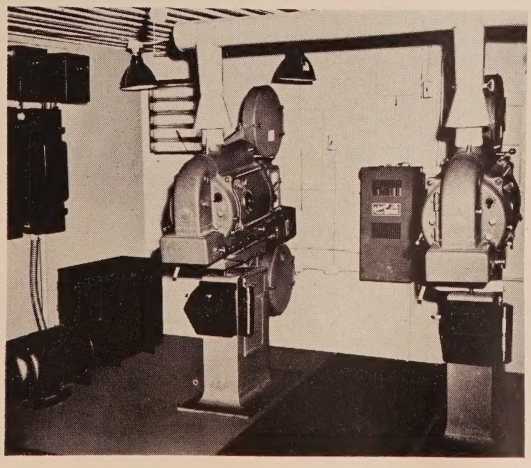


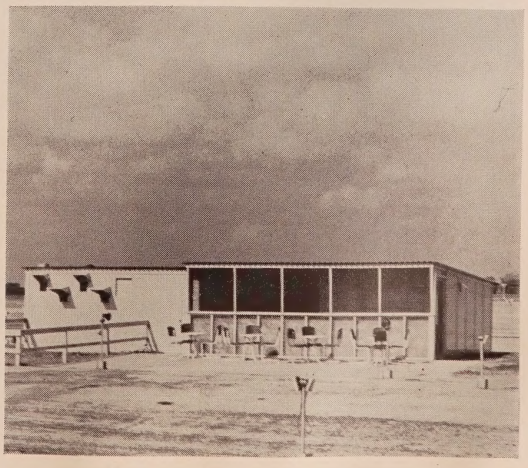


ONE OF THE 20 COMPLETED was the Phenix at Phenix City, Alabama. Top, left: The box office is trim and modern. Top, right: An interior view showing the screen tower and rear of the confection-projection building. Center, left: A portion of the confection counter being readied for opening. Center, right: The prefabricated attraction board is bolted to concrete footings. Bottom, left: Booth of the Cherokee, Dalton, Georgia contains Ballantyne projectors, soundheads, bases, and arc lamps. Bottom, right: Projection and confection building just after final on-job assembly.









The Four-Screen Drive-In Plan

Construction Economies and More Flexible Operation Afforded Under an Ingenious Quadruple Arrangement

The same fertility of imagination exercised for many years in the design, construction, and equipment of roofed theatres has likewise been brought into full play with drive-ins during their relatively short existence. Each day seems to produce another ingenious idea for the layout of ramp areas, the erection of screen towers, or the manufacture of larger and more powerful projection machines, etc. In short, outdoor theatres have stimulated the imaginations of designers and builders to the point where almost every new drive-in contains some feature that gives it an individualistic touch.

One of those far-sighted visionaries, who has enlisted his talents and drawing boards in the service of the drive-in industry, is Architect Lewis E. Wilson. A gifted and enterprising craftsman, who has won particular acclaim for the funnel-shaped wood truss incorporated in the design of the Baldwin, Los Angeles (see p. 132, 1949-50 Edition of THEATRE CATALOG), Wilson has come up with a new concept in drive-in design which may prove to be one of the greatest innovations in the field since the introduction of the in-car speaker.

FUNDAMENTAL ASPECTS

Architect Wilson has planned and put into operation a plan which actually rolls four drive-ins into one. Briefly, the scheme provides for four small outdoor theatres with a screen for each in a corner of one large site and a common projection booth in the center of the entire plot. Through a clever use of mirrors, two sets of projectors are able to serve the four screens with a specially developed beam-splitter (see accompanying drawing). Since four machines are installed in one booth, the operator may tag the reel from one side to the other, and duplicate prints are not required.

BRIEF: ***Quite a stir in the outdoor theatre field . . . limitedly akin to the world-wide interest aroused in the birth of the famous Dione quintuplets . . . has been created by the development of drive-in quadruplets . . . The brain-children of Architect Lewis E. Wilson . . . who has succeeded in dividing up a 1,200-car capacity among four exhibition areas with a clever split-beam optical system . . . these novel theatres are actually four-in-one . . . Economical to build . . . and easy to run from one central point . . . the four-screen drive-in offers many advantages over the orthodox single-screen type . . . and even over the novel two-screen variety.***

The following survey describes the basic principles of the design scheme . . . and shows how it has been actually applied in the construction of two theatres . . . the 4-Screen Drive-In, Chicago . . . and the St. Ann Drive-In, St. Louis.

Operational Schedule

Shows in the four theatres are usually run according to the following general pattern: A performance starts in Theatre #1 with a short opening reel in Projector #1; while it is being run, Theatre #2 is filling. In the meantime, Projector #2 is threaded for the feature attraction, which begins in Theatres #1 and #2 as Theatre #3 is filling.

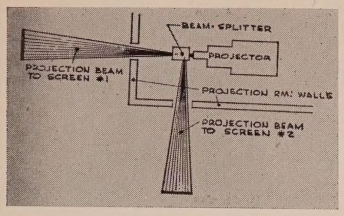
The short started in Theatre #1 has, by this time, reached Theatres #3 and #4, and Projectors #1 and #2 are in the process of exhibiting the feature in customary two-projector fashion to Theatres #1 and #2. Immediately after Reel #1 has been run off, it proceeds to Projector #3 for showing in Theatres #3 and #4, while Projector #4 is threaded with Reel #2 as soon as it is released from Projector #2.

Construction Economies

Due to the fact that the individual theatres are small with only 6 to 8 ramps each and accommodate only 300 cars apiece, little costly grading is necessary; in the conventional 1,200-car theatre, on the other hand, the rear 10 to 15 ramps have to be quite high and thus require expensive grading.

By the same token, screen towers are smaller and less costly to build. Furthermore, since the projection booth is located in the center of the site, it is possible to service the project by dropping overhead power lines down into the booth, thereby saving the expense of underground wiring from the street to the booth required by orthodox drive-in design.

THE DIAGRAM BELOW clearly shows the arrangement of the various elements in the four-screen drive-in plan, including the broad lanes for the movement of traffic in and out of theatre.



SCHEMATIC DRAWING of the beam-splitting arrangement for projection to two of the screens.

Finally, the four-screen drive-in may be readily adapted to various shapes of land. It is also quite possible to build only two screens in a location and then add two more when increased business warrants the expansion.

Traffic Control

One of the outstanding features of this four-screen set-up is the extensive control over traffic it provides. Arrangements have been made, through an eight-lane holdout area, for accommodating the entire 1,200-car capacity of the theatre. After the patron buys his ticket, he is directed to Lane #1, #2, #3 or #4 and must remain in that lane to enter the unit to which it leads. These lanes are separated by small fences, so it is impossible for cars to leave the lane to which they are assigned.

The showings of films can be so scheduled that the break can occur in one, two, three, or all four theatres at once. Thus, instead of dumping 1,200 cars into adjoining highways at the same time, theatre breaks may be arranged, if desired, so that only 300 cars empty from one unit before another breaks. It is estimated that the entire operation can be emptied in 12 minutes and completely refilled in approximately 15. This staggering of car movements also serves to relieve heavy flows of pedestrian traffic within the theatre to and from the refreshment stands and rest rooms.

Other Advantages

Due to the fact that the structure containing the snack bar is located in the rear of the ramp area, it can be fully lighted without disturbing any patron's view of the screen. Situated in an island area approximately one acre in size, this three-story building houses the snack bar and rest rooms on the first floor, the projection booth and dressing rooms for employees on the second, and the manager's office on the third and top floor; from this vantage point he has an unobstructed view of the entire area.

Surrounding the building is a plot where a children's playground may be set up. Parents may sit on the porch of the refreshment stand and supervise their offspring while they continue to watch the show.

Lastly, it should be pointed out that the small size of each unit in the theatre provides a striking atmosphere of intimacy, in addition to affording every patron an excellent view of the action taking place on the screen.

TWO ACTUAL OPERATIONS

The four-screen drive-in idea had hardly left the drawing boards when it became the object of much interest in the industry. Several outdoor theatre operators, convinced of its practicality, immediately placed orders with Architect Wilson. Unfortunately, not many installations were started or completed before the government ban on amusement construction halted further progress, although at least half a dozen more were contemplated (besides those already operating or under construction) at the time of the "freeze."

4-Screen Drive-In, Chicago

The first quadruple-screen outdoor theatre was opened in June, 1950, at the intersection of 138th and Halsted Streets in Chicago. An Essaness Theatres operation, it has the expected total capacity of 1,200 cars, divided up equally among four ramp systems which radiate from a screen at each corner of the rectangular-shaped plot. Eight ramps in each one of two individual theatres accommodate 300 cars, while six apiece provide parking spaces for an equal number in the other two units. The longest viewing distance from any point in all four sections is 200′ less than it would be for a similar total capacity under the usual drive-in plan.

Feature pictures begin and end for two of the theatres 10 minutes in advance of the other two. Driveways, marked by low fences and shielded lamps spaced at suitable intervals, circumvent each of the sections. A common entrance drive feeds cars into lanes leading to the ramps at a point midway on one side, while exit is made in all cases into roadways situated immedately inside the rustic fencing enclosing the exhibition area. Cars in two theatres empty into one highway through a common exit, while those in the other two depart through separate exits into the other adjoining thoroughfare. Incidentally, Essaness distributes incoming vehicles among all of the units from the start, rather than filling them up one at a time.

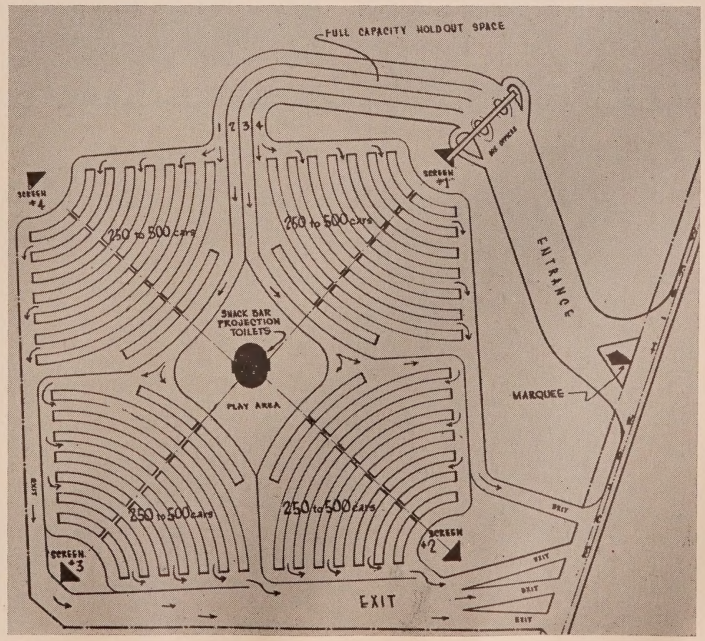
Center of operations is the pagoda-like building in the middle of the site. Located here are two glass-enclosed refreshment stands, comfortable rest rooms, projection booth, and a control tower from which the manager may observe activities in all four units.

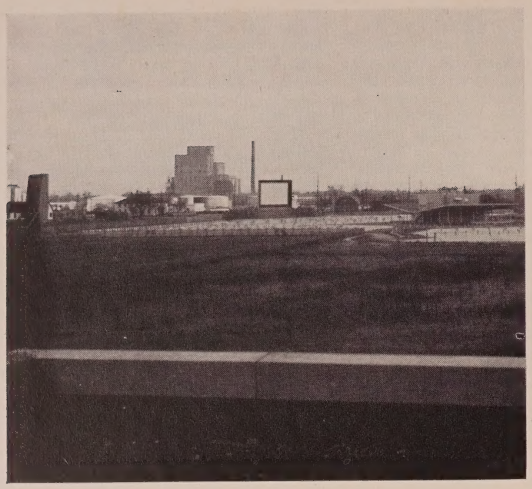
Projection is, of course, accomplished under the aforementioned Lewis plan by a split-beam optical system. As previously, explained, this requires only one print, but Essaness uses two in order to obviate the need for immediate rewinding and threading of following projectors with warm film.

The picture thrown on each screen is approximately 50′ wide and is lighted by Peerless straight high-intensity lamps operated at 180 amperes. Structures are of laminated wood construction, and the screens themselves are painted plywood. The sound system and in-car speakers, as well as the projector mechanisms, are Simplex. Since the projection booth is located above the refreshment stands, there is little projection angle, thus making the screens almost perpendicular.

The immediate area around the central building is neatly landscaped and contains a rail ride for children supplied by the Miniature Train Company. Finally, due to the number of ramp systems, lighting at the 4-Screen Drive-In is appreciably more extensive and detailed than that found at the average outdoor theatre.

THE GENERAL PLOT PLAN below illustrates painstaking manner in which Architect Wilson has worked out his four-screen drive-in plan with special attention toward providing easy access and egress.





AN OVERALL VIEW FACING SOUTH in the left illustration shows the quartet of separate parking areas at the Four-Screen Drive-In, Chicago.

RIGHT: The name of the theatre is prominently displayed at the head of the main entrance drive, whence cars feed into the four unit lanes.

St. Ann Drive-In, St. Louis

Although this Saint Louis Amusement Company project is due to open in the spring of 1951, construction had not been entirely completed at the time of this writing; hence, its owners were unwilling to release much data on it for inclusion in this edition of THEATRE CATALOG. However, it is pictured here as another example of the adoption of Architect Wilson's four-screen scheme.

Like its Chicago counterpart, the St. Ann has a quartet of screens which permit an equal four-way division of the car capacity, so that no automobile will be more than approximately 325' from the screen of the unit in which it is parked. A similar eight-lane holdout area has been provided to take traffic off the main highway. Near the entrance to the theatre area proper, these eight lanes are divided into four channels by means of concrete dividers. Each of these channels leads, of course, to a separate section of the theatre.

The manager's office, rest rooms, refreshment stand, and projection booth are likewise housed in a single structure in the center of the site. Projection is handled by the same split-beam optical system used at the Chicago operation. It is hoped that a more complete written and pictorial presentation of the St. Ann may be included in the pages of the 1951-52 Edition of THEATRE CATALOG.

CONCLUSION

Due to the considerable interest which the economical four-screen design has already aroused in the ranks of the drive-in industry, it is reasonable to assume that a number of other outdoor theatres built will be constructed on this plan as soon as the government ban on amusement construction is lifted. The practical layout incorporated in the scheme certainly makes for flexibility of operation, and it is estimated that the construction economies effected permit the building of a four-screen drive-in at one-third to one-half the cost of a conventional drive-in with a 1,200-car capacity.

Although Architect Wilson holds a patent on the scheme, he does not, however, endeavor to collect any royalties or to sell any franchises for its use. He simply allows the patent rights to go along with his architectural and engineering services.

CONSTRUCTION WAS STILL IN PROGRESS on the St. Ann Drive-In, St. Louis, when this shot was taken showing the fence, boxoffices, central building, and two of the four screens erected.

A Mobile Outdoor Theatre Circuit

Portable Power Units Supply All of the Operating Requirements of Three Theatres in Minnesota Woods

BRIEF: ***Everyone knows the old tale of how the mountain came to Mohammet . . . but relatively few know the inside story of how drive-in movies are brought to patrons in the midst of a thick woods . . . This modern miracle . . . incredible though it may seem . . . has, however, been accomplished effectively by an enterprising Minnesota exhibitor.***

Here . . . in brief . . . is the true account of a wondrous theatre circuit on wheels . . . which burrows deep into the forest primeval six nights a week . . . with full equipment in tow . . . to link the throbbing heartbeat of Hollywood to the still of the pines.

The pine-decked, lake-studded region between Mille Lacs and Leech lakes in northern Minnesota is known as The Long Pine Playground Area. The quiet woods and placid lakes draw many thousands of pleasure-seekers from every part of the United States during the summer months. Fishing, boating, swimming, and games like tennis or shuffleboard form the major pastimes.

An Idea Is Born

In 1948, however, something new came to this famous resort region. John Rohr, owner of the Marlow Theatre at Pine River, correctly surmised that vacationers also like to see a movie show now and then to relax from the rigors of a day's fishing or playing, or when the weather may be "off key." But since many of the lake resorts or private camps are too far from local theatres such as his, he figured that motion picture shows should be closer to the resorts. Thus Rohr did the unusual, formed his own drive-in circuit, and brought shows to the woods with outstanding success.

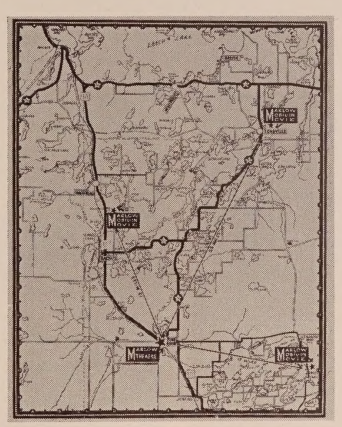
He set up the Marlow Mobil-in Circuit, composed of three outdoor theatres, each located in the midst of the most densely populated resort areas. The first unit was opened June 17, 1948, at Cross Lake, and became an immediate success. In July and August of the same year, he completed two others—at Longville, and at a point midway between Backus and Hackensack.

Unique Aspects

The Marlow Mobil-ins differ from orthodox drive-ins in several respects. The major distinguishing feature lies in the fact that all the operating equipment (projectors, sound system, and even the power supply) is entirely mobile, so that it may be used at each of the three spots on different nights. Two different shows per week are run at each location, with the entire circuit taking six days—Monday through Saturday.

The Mobil-ins operated by Rohr differ also in appearances, for all of them are placed in areas literally hacked out of the forest to lend a ruggedness in harmony with the resort atmosphere. At the Backus-Hackensack location, for example, the patron leaves the highway, buys his ticket, and drives approximately a fifth of a mile through dense pine forest. At the end is a clearing with rows of parking lanes for nearly 100 cars.

Rohr's Mobil-ins are entirely the result of his own ingenuity. So far as is known, his "theatre on wheels" is the first and only such set-up existing in the United States or Canada. The design of the project from the beginning gave both Rohr and his engineer-sound man, Elmer Bloom, something to think about. There were lots of problems involved.



MOTHER HOUSE of the mobile circuit is the roofed, 310-seat Marlow Theatre at Pine River which renders an all-year service. Note from the map that the three drive-in theatres are situated 15 to 25 miles away and serve different areas.

Solution of Power Problem

The most important element in the set-up is a dependable, inexpensive electric power supply, a major problem at the outset. First of all, the R.E.A. lines, on which most of the Mobil-ins were located (dependable as they are under difficult conditions), could not possibly guarantee uninterrupted service or constant voltage.

In the second place, any independent power supply would have to be very mobile and trouble-proof, especially in view of the fact that a requirement of 10,000 watts was needed to run the show. Thus, after careful analysis of the situation, Rohr and Bloom concluded that the only solution was to produce their own power. One season's operation served to show the wisdom of this decision.

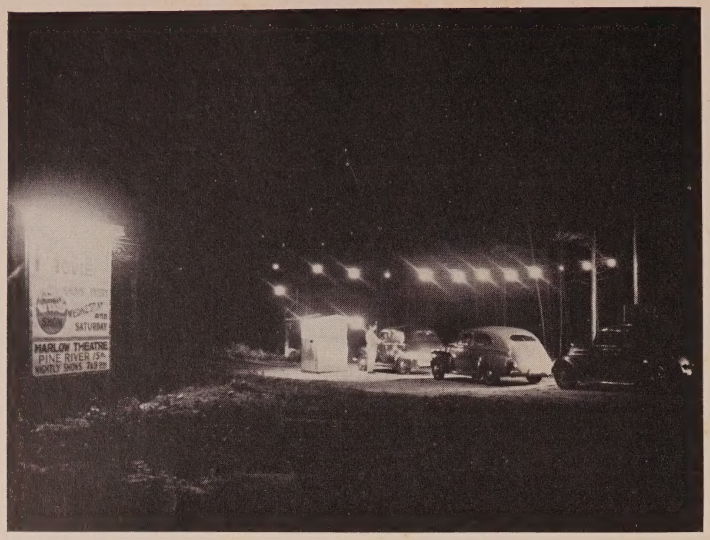
Although all of the equipment in the Mobil-in setup pulls a total of about 10,000 watts, two Onan 3,000-watt portable generating plants fulfill all requirements by clever figuring and staggering. The breakdown of wattage demands of the equipment is as follows:

Two Holmes projectors and Strong high-intensity lamps (4,000 watts); one Manley popcorn machine (3,000 watts); Operadio sound system and Jensen speaker, entrance lights and signs, parking lights, trailer lights, miscellaneous (approx. 3,000 watts).

Overloading of the two 3kw plants is prevented by staggering the various loads.

Transportation Equipment

The "theatre on wheels" consists of a small truck and a two-wheel aluminum trailer. The truck serves three purposes



A TYPICAL NIGHT VIEW indicates the necessary economy of painted signs and wooden boxoffice; but the arrangement is orthodox, and powerful floodlighting provides the area with a festive atmosphere.

in carrying the two Onan 3kw generating plants, pulling the trailer, and providing a mount for speakers. The screens themselves are permanently installed on location. A neat, compact outfit for easy setting-up and taking-down has been perfected.

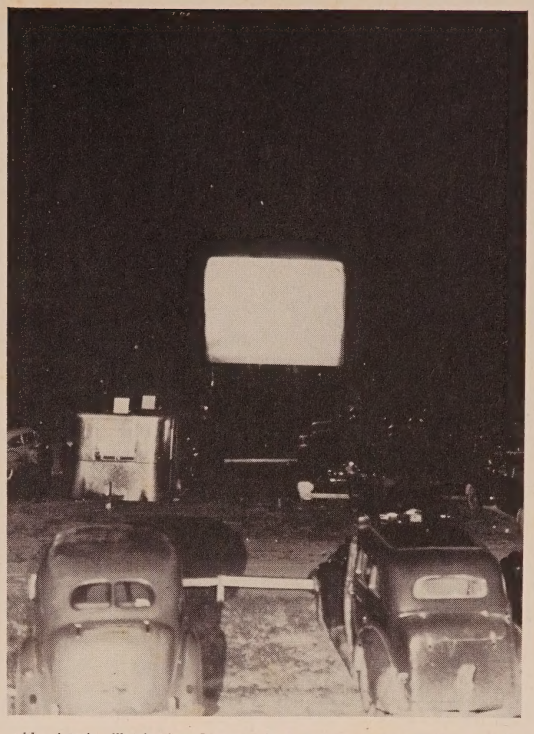
Upon arrival at locations, the truck is unhitched and used to hold the central speaker, set up directly under the screen for each performance. The truck can then be driven easily through the woods to the location of the electric plants.

Two medium-size power units, instead of one large one to handle the entire load demand, were selected because the Onan units are quite easy to handle, and may be loaded and unloaded with ease, thereby leaving the truck free for the speaker assignment and odd hauling jobs.

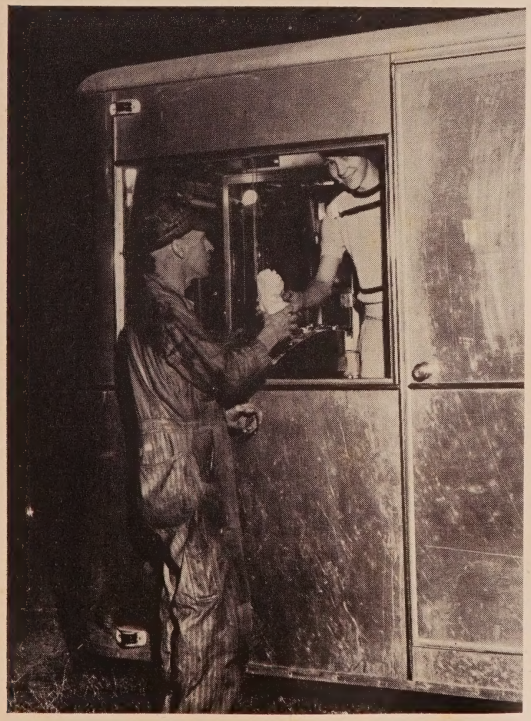
Conclusion

The set-up as a whole is smooth, efficient, and well planned. Such operational perfections, are, of course, necessary, for performances in different locations every day and simply don't permit clumsiness. Thus, from the first week in June until the first week in October, the Mobil-in theatres bring the entertainment of movieland to the people of vacationland.

DOUBLING IN SERVICE are all men and equipment. The panel truck carries the Onan generators to supply power for lighting, projection and sound, and on its roof the large sound horns. It also tows the special projection room and confection stand trailer. After unhitching the trailer in place, the truck drops the generators at a point far enough removed so their noise won't interfere, and then parks under the screen tower where it becomes a stand for the sound horns. Ramp boards are checked before each show and a well placed nail returns them to service.



OPERATING TECHNIQUES follow conventional lines but are necessarily adapted to both budget and local conditions. Top, left. All trails through the area are well posted with reminder signs. Top, right. The Cross Lake Drive-In at intermission time when the reflected light from the screen provides interior illumination. Lower, left. A come-as-you-are patron buys his popcorn, candy and gum from the mobile confection stand. Lower right. Manager Elmer Bloom checks over the boxoffice change box. John Rohr and his crew build ticket offices such as this at each theatre in their "spare time."



1950-51 Review of New Drive-In Construction

A Pictorial Survey of Design and Other Features Apparent in New Drive-Ins Which Opened Recently

BRIEF: ***The drive-in construction boom has been temporarily halted . . . but only due to the exigencies of the defense program . . . at a healthy total of 2,703 . . . according to all data available to the Editors of THEATRE CATALOG.***

This represents an increase of 950 over last season . . . and the end does not appear to be yet in sight . . . There is every indication that the 3,000 mark will be surpassed . . . once building restrictions are lifted.

Shown on the following pages is a cross-section of these new drive-ins . . . carefully chosen by the Editors for their construction merits . . . Each of the 20 indicates the progress which has been made in the field . . . an increasingly important segment of the theatre industry.

Fully established as permanent and important fixtures on the American entertainment scene, the approximately 2,703 drive-in theatres currently in operation throughout the United States have long since discarded the apparel of novelty to become an institution as accepted as baseball. The parallel between these two forms of amusement may be extended further when one stops to consider that both of them owe their success mainly to the fact that they appeal to people of all ages, both male and female. In short, drive-in theatres and baseball have one outstanding similarity—they are both family institutions.

As outdoor theatre owners and operators have become increasingly conscious of the fact that the American family, including everyone from Grandpa to Baby, constitute their real life blood, they have expended constantly broadening efforts to cater to this select clientele in every way imaginable. Many theatres now furnish bottle-warming services for babies, recreation areas for children, and such conveniences as in-car heaters and air-conditioned ramp houses for their elders.

Drive-ins have been able to attract family patronage not only because of the special services they feature, but also because of the natural advantages which they can offer. The vast majority of outdoor theatremen have been quick to recognize and advertise widely such assets as patrons dressing as they please, smoking in cars, no need for baby sitters, a guaranteed parking place for the car, etc. The most successful drive-ins are those which have exploited such points of appeal and, at the same time, operated a clean and orderly enterprise in pleasant surroundings.

Before the National Production Authority issued its Order M-4 on October 16, 1950, prohibiting all further new drive-in as well as roofed theatre construction, some 950 new outdoor theatres had been built during the past season. They were, for the most part, first-class structures which, along with their predecessors, have been able to obtain better film clearances as the industry has come to recognize their importance in the exhibition field.

The new drive-ins depicted on the following pages have been carefully selected for presentation by a qualified staff of experts. Like the roofed theatres treated elsewhere in this volume, some will be the recipients of the Merit Award plaque, awarded anually by the Editors of THEATRE CATALOG and the PHYSICAL THEATRE Department of its sister pubication EXHIBITOR, to those theatres which represent the finest in construction excellence, layout, and scientific planning in relation to the patronage served; seven drive-ins appearing in the 1949-50 Edition of THEATRE CATALOG were so honored.

The 20 theatres pictorially reviewed here have an average car capacity of 700 and cover 12 states. This would appear to indicate that some of the best drive-ins are found in the medium-size class, for only one of the following has a car capacity in excess of 1,000. Furthermore, many of them have been built with a relatively modest budget, but skillful planning and use of materials have enabled them to meet the high standards of excellence which governed their selection for inclusion in this survey.

As the reader leafs through the pictorial panorama of the finest in recent drive-in theatre construction which follows, he may well note certain characteristics that mark them. Some of these drive-ins have perhaps only a few special features, above and beyond excellence in general construction, while others may have more, but all of them have at least one or two notable points of appeal directly aimed at attracting family patronage.

First of all, in recognition of the important role which the younger generation plays in the success of any drive-in operation, many of the new theatres have recreation areas for children with either simple playground equipment, mechanized or pony rides, or a combination of both, which is frequently the case.

Secondly, in deference to the eye-catching appeal of landscaping, drive-in operators appear to be paying more and more attention to the creation of spacious lawn areas and the cultivation of appropriate shrubbery and other forms of horticulture that lend visual beauty to the theatre site.

Thirdly, although the greatest number of new drive-ins seem to be located some distance away from the hearts of nearby cities or towns, a good many of them have made ample provisions for walk-in patrons by setting up special chairs for their use. It would appear that this is an attempt to attract the patronage of nearby residents in these suburban areas who might well not be bothered to roll the family jalopy out of the garage. Likewise, some patrons who do come in cars prefer to sit outside to watch the show.

Other features worth noting are: large and boldly lighted sign and attraction boards; de luxe refreshment stands; living quarters for managers or caretakers in some screen towers; spacious holdout areas; extensive use of ornamental fencing; frequency with which rest rooms, refreshment stands, and sometimes projection booths, are combined under one roof; common installation of a picture window in concession area so patrons may continue to watch the show while making purchases and the patio with chairs in front for their relaxation while eating; and the multiplicity of extra services provided, ranging from windshield wiping to special telephone facilities for doctors and nurses.

DRIVE-IN THEATRES ILLUSTRATED ON THE FOLLOWING PAGES:

California, San Francisco, **Geneva** .. 206
California, Visalia, **Sequoia** 200
California, Woodland, **Sunset** 214
Illinois, Canton, **Hillcrest** 216
Illinois, Centralia, **Centralia** 208
Kentucky, Bowling Green, **Lost River** 212
Kentucky, Carrollton, **Riverview** ... 192
Kentucky, Louisville, **Twin** 185
Louisiana, Thibodaux, **Colonial** 219
Michigan, Caro, **Caro** 204
Missouri, Mexico, **Little Dixie Airway** 194
New Jersey, Eatontown, **Eatontown** 202
New Jersey, Pleasantville, **Atlantic**. 188
Oklahoma, Woodward, **Terrytime** .. 210
Pennsylvania, Espy, **Family** 220
Tennessee, Nashville, **Colonial** 217
Texas, Beaumont, **Pyramid** 198
Texas, Dallas, **Jefferson** 218
Texas, Ft. Worth, **Cowtown**..... 190
Wisconsin, Kenosha, **Keno Family**.. 196

TWIN •

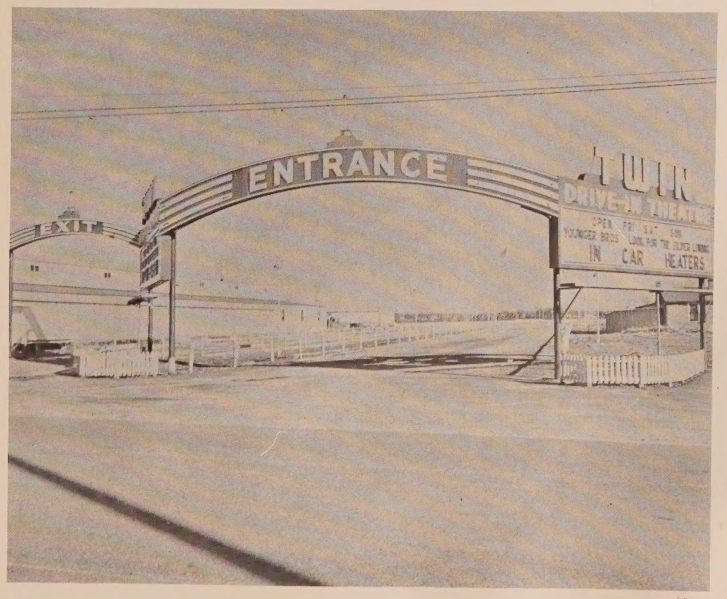
Louisville, Ky.

Located on a 27-acre lot, on which other amusement facilities will be built also, the double-screen Twin was opened June 30, 1950. Second-run pictures are shown to a mixed suburban populace.

On either side of the entrance arch are neon-lighted reader boards and two exit arches. A four-lane entrance drive leads to dual boxoffices, and hence on to entrance to the theatre proper through the tunneled screen tower.

Warehouse space is built into the screen tower, and beneath it is situated a well-equipped playground and seats for walk-in patrons on each side.

Two spacious concession stands have terrazzo floors and plaster walls, as well as tiled rest rooms under the same roof. Projection buildings are in front.



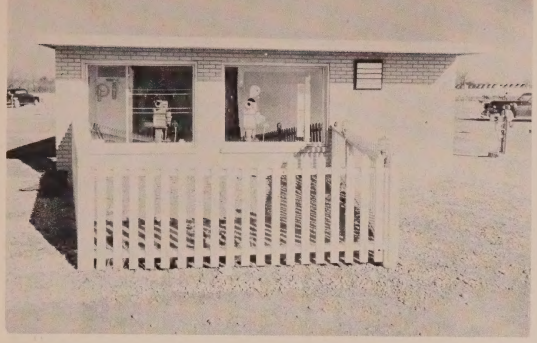
REFERENCE DATA

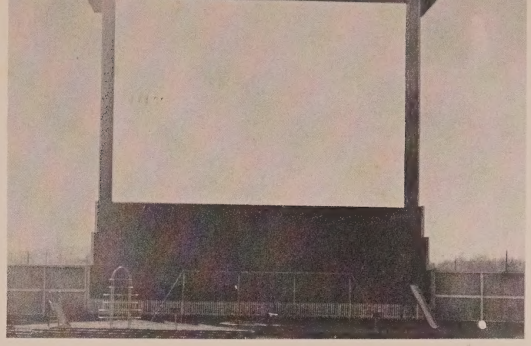
OWNER & OPERATOR: Twin Drive-In Theatre, Inc.
ARCHITECT & ENGINEER: Louis A. Arru.
CAR CAPACITY: 1,800 plus 600 seats.
COST OF BUILDING: $260,000.
COST OF EQUIPMENT: $60,000.
SIZE OF LOT: 27 acres.

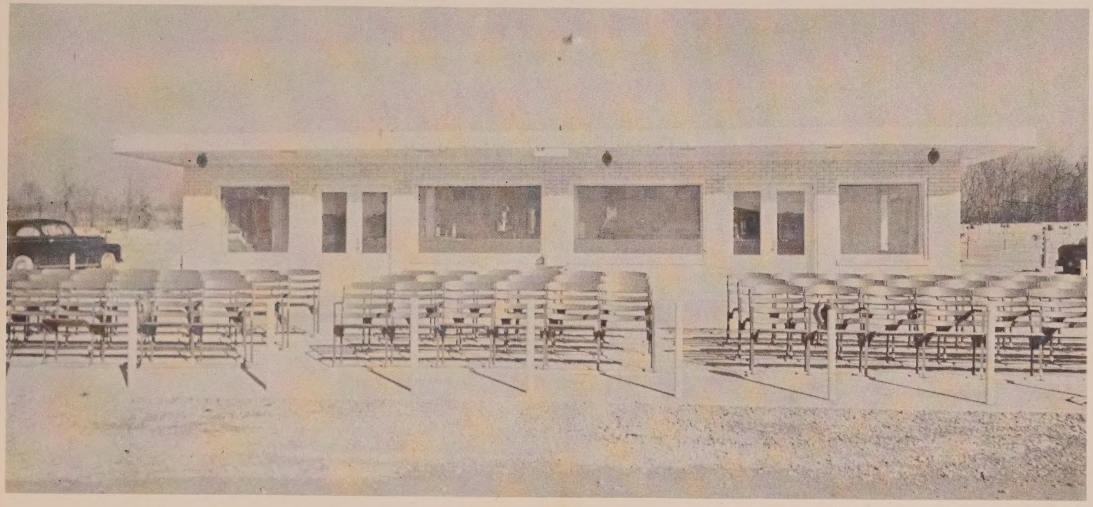
Changeovers: Essannay Electric Mfg. Co.
Decorator: Kirchdorffer & Howell.
Generators: Motiograph, Inc. Hi-Power.
In-Car Heaters: National Heater Co.
In-Car Speakers: Motiograph, Inc.
Lenses: Kollmorgen Optical Corp.
Projection Lamps: Strong Electric Corp.
Projection Machines: Motiograph, Inc.
Rewinders: GoldE Mfg. Co.
Sign & Marquee: William J. Rueff Co.
Sign Letters: Theatre Specialties, Inc. 10", 17" Bevelite.
Sound: Motiograph, Inc.
Supply Dealer: Falls City Theatre Equip. Co.
Ticket Issuing Machine: General Register Corp.

ONCE PAST THE DUAL BOXOFFICES, the patron enters the tunneled screen tower and proceeds to either the east or west side of the theatre. BELOW:

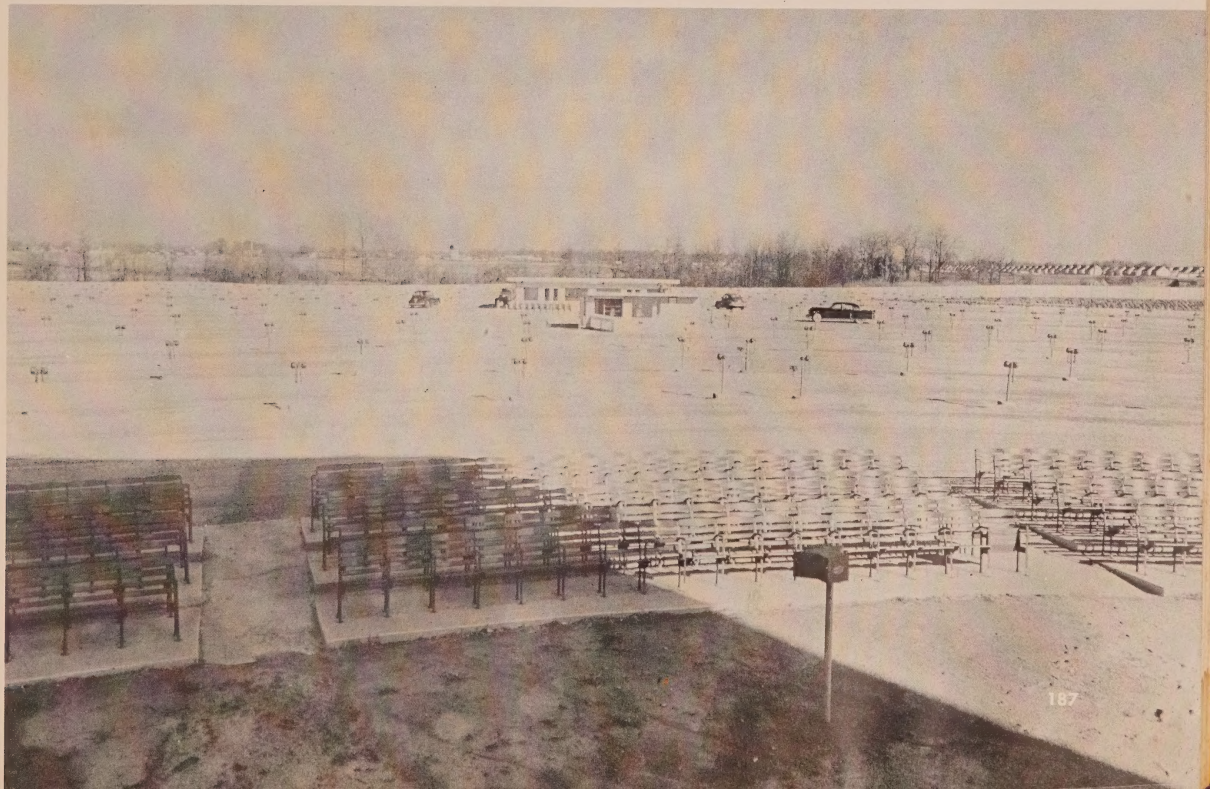
Located in the rear of ramp area for easy access, the concession stands sell a wide variety of wares and have front picture windows.

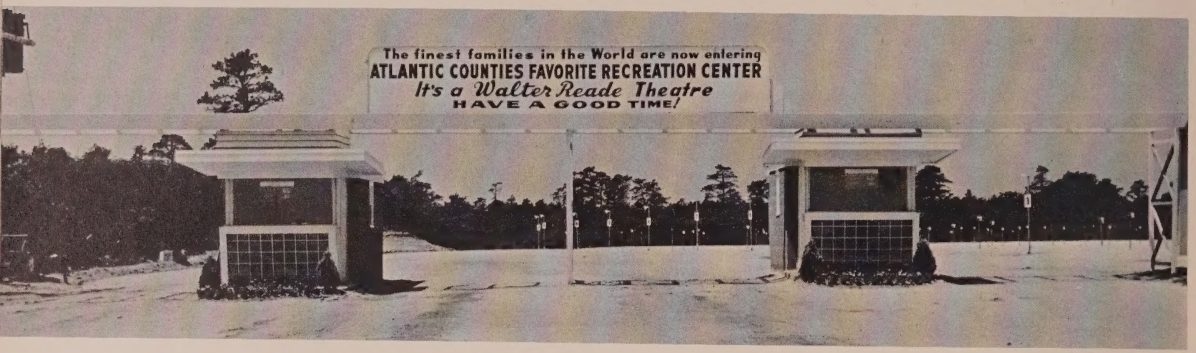






THE GLASS PROJECTION BOOTH FRONT enables patrons to view operation of the equipment, supplied by Falls City Theatre Equipment Co. The playground area front and concession stand patio have chairs for walk-ins. **BELOW:** An overall rear view of one side of the "two-in-one" theatre.





ATLANTIC •

Pleasantville, N. J.

Only eight miles from the center of renowned Atlantic City. This theatre was opened June 16, 1950. Subsequent-run pictures are shown on a double-feature basis.

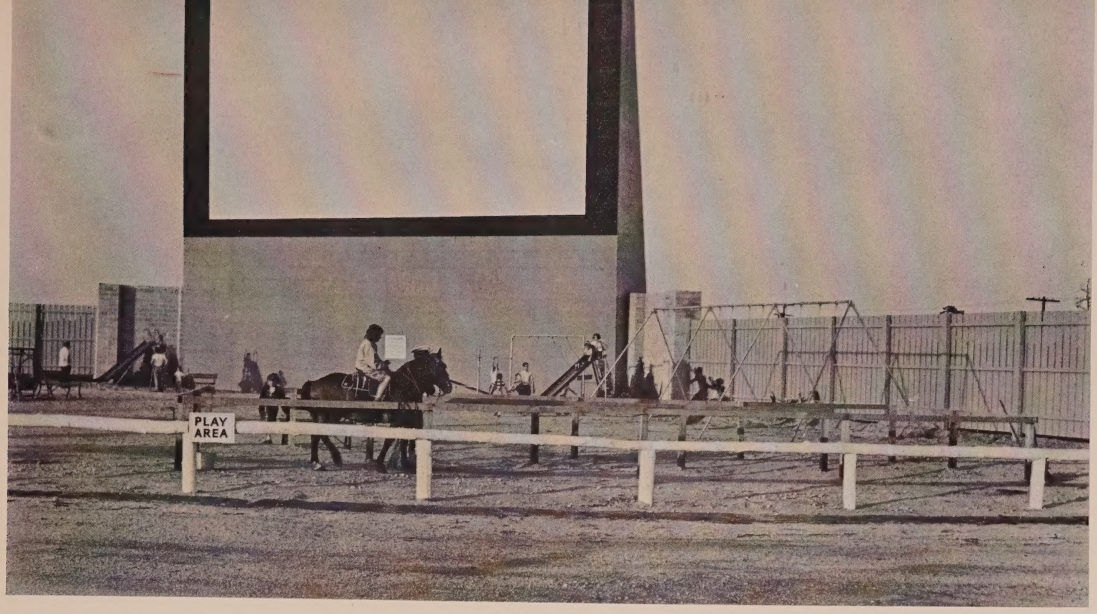
Name and attraction boards at the front are built around a pylon shaped like a "light house" with a flashing light at the top.

Boxoffices and refreshery-projection and rest room building are of cinder block. A large playground area and television facilities are provided.

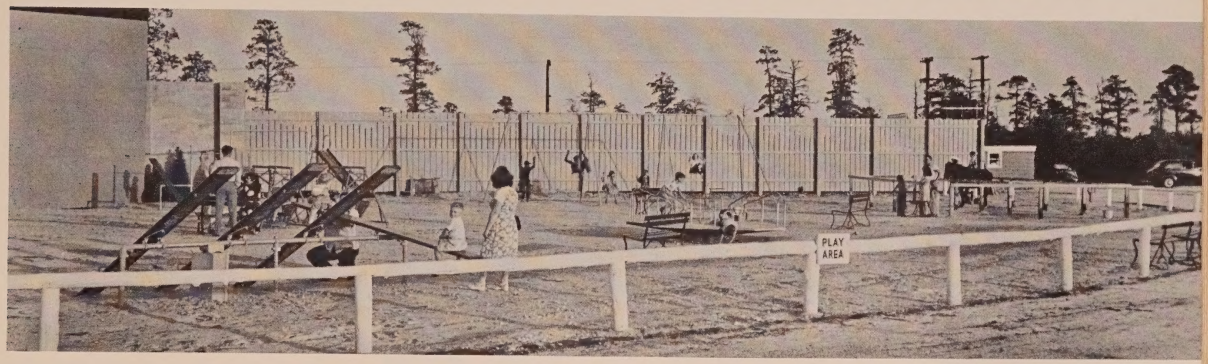
REFERENCE DATA

OWNER & OPERATOR: Walter Reade Theatres, Inc.
CAR CAPACITY: 900.
COST OF BUILDING: Over $150,000.
SIZE OF LOT: 20 acres.

Generators: Imperial Electric Co.
In-Car Heaters: National Heater Co.
In-Car Speakers: International Projector Corp. Simplex.
Projection Lamps: C. S. Ashcraft Mfg. Co.
Projection Machines: International Projector Corp.
Sign Letters: Manhattan Wood Letter Co.
Sound: Motiograph, Inc.
Supply Dealer: Joe Hornstein, Inc.; National Theatre Supply; Amusement Supply Co., Inc.
Ticket Issuing Machine: General Register Corp.
Ticket Chopper: General Register Corp.
Vending Machines: Orange Crush; Manley, Inc.



THE SPACIOUS PLAYGROUND under the screen tower attracts the enthusiastic interest of many youngsters with its varied array of equipment and free pony rides. Recreation facilities are furnished for adults as well. The airy refreshery is finished in green and opens toward the screen.



THE PICTURESQUE ENTRANCE to the theatre becomes even more scenic when patrons draw up to the glass-enclosed boxoffice and purchase their admission tickets from long-legged cowgirls in Texas regalia.

COWTOWN •

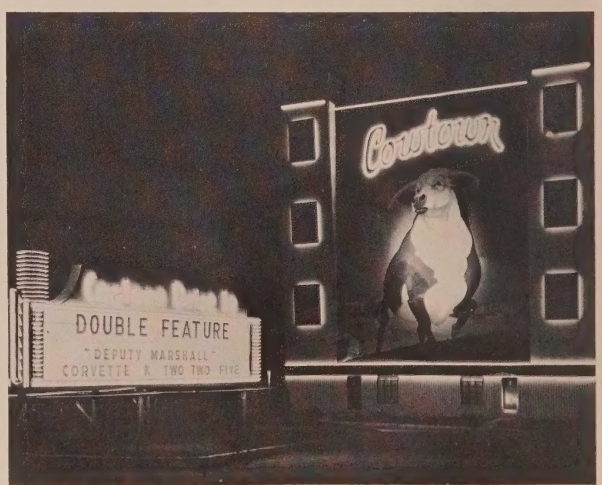
Fort Worth, Texas

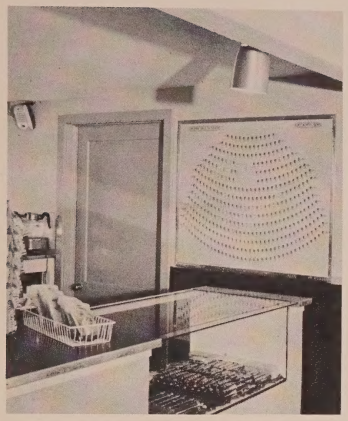
Opened September 2, 1950, the Cowtown shows principally third-run pictures to a working-class populace of 150,000.

The front is dominated by a huge mural on the rear of the screen tower depicting a steer and the Fort Worth skyline. This, along with a large attraction board is brilliantly lighted at night.

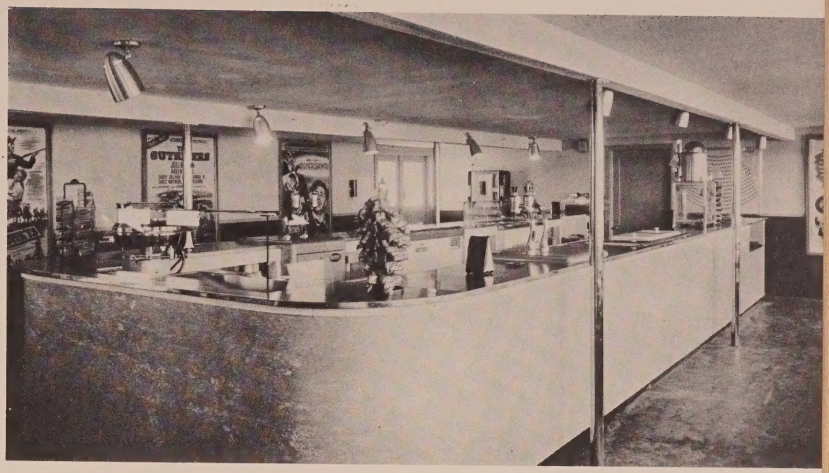
Bright green and red have been used in the color scheme of the concession building, which also houses the tiled men's and ladies' rooms, done in blue and pink, respectively. The projection booth adjoins this structure.

Special features include a children's playground and in-car heaters.





LIGHTS on concession panel flash on when speaker buttons are pushed for in-car service.

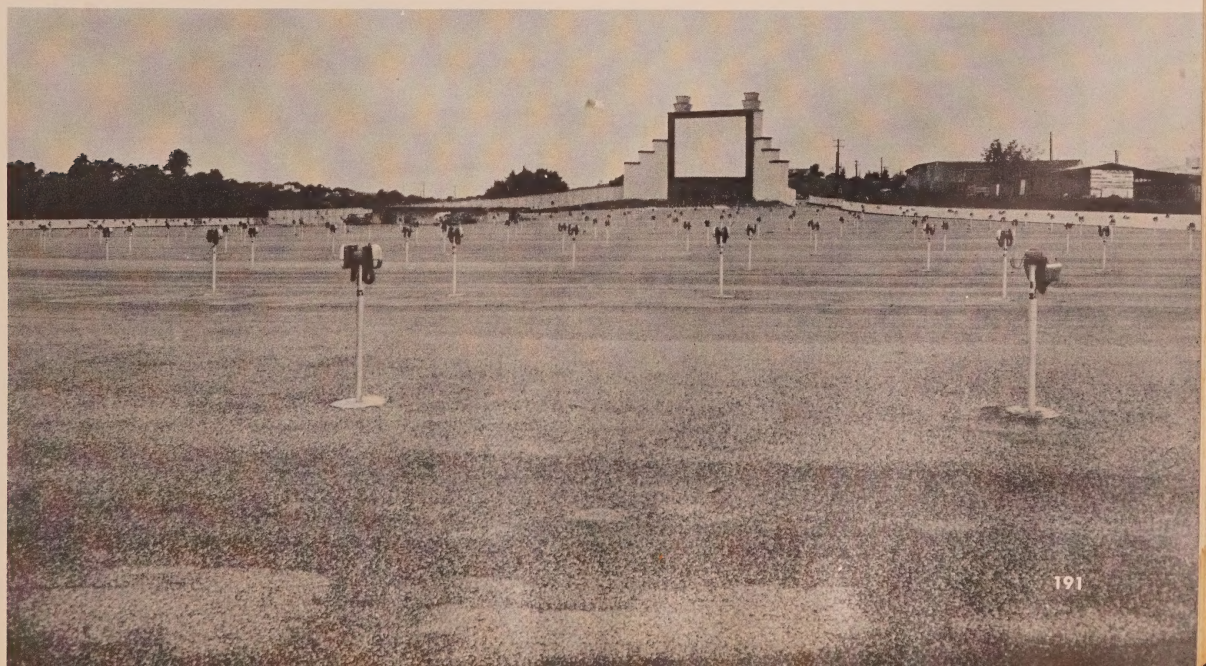


REFERENCE DATA

OWNER & OPERATOR: Cowtown Theatres, Inc.
ARCHITECT: Harvey Jordan.
CAR CAPACITY: 950.
COST OF BUILDING: $92,500.
COST OF EQUIPMENT: $40,000.

Generators: Century Electric Co.
In-Car Speakers: RCA.
Lenses: Bausch & Lomb Optical Co. F 2.0.
Projection Lamps: RCA.
Projection Machines: RCA BX-80.
Rewinders: GoldE Mfg. Co.
Sign & Marquee: Wagner Sign Service, Inc.
Sign Letters: Wagner Sign Service, Inc. 10", 17" Red plastic.
Sound: RCA.
Supply Dealer: Southwestern Theatre Equip. Co.

THE REFRESHMENT BUILDING, which has advertising posters cleverly spotted around the walls surrounding the de luxe counter, features a visual glass front overlooking the ramp area toward the screen. Chairs on the patio in front enable patrons to relax comfortably and watch the show while they eat.



RIVERVIEW •

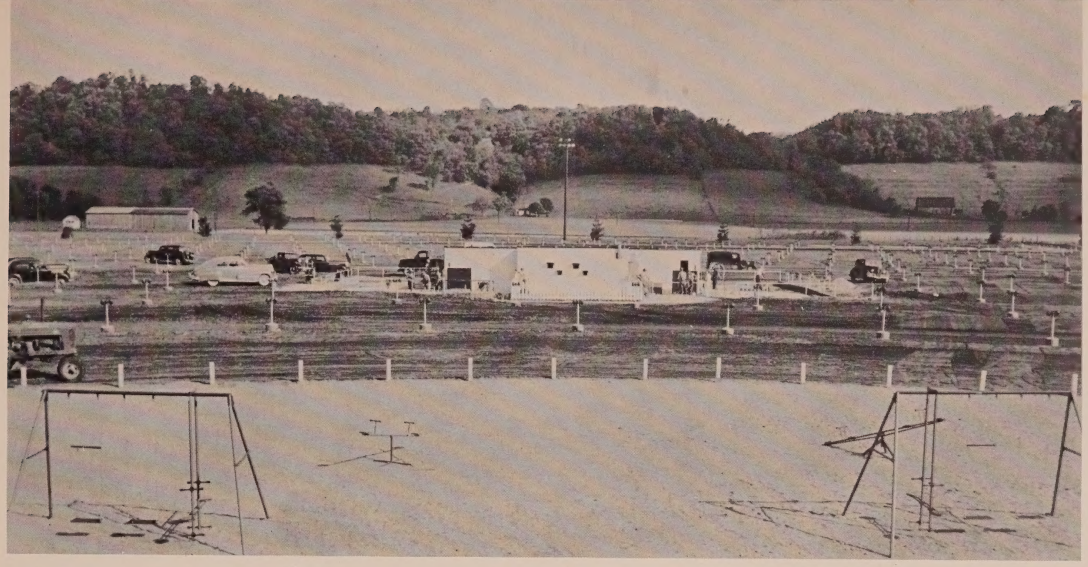
Carrollton, Ky.

Located on U. S. Highway 42, the Riverview was opened May 18, 1950. Three changes per week are offered to a small town and rural patronage of 20,000.

The large screen tower is finished in white paint with colored neon lighting listing the name of the theatre across the face. Living quarters and office space for the manager are contained in it.

Before reaching the two-lane entrance at the boxoffice, cars must proceed past a large holdout area, where they can be shuttled if necessary.

The complete parking area within contains a spacious concession stand, booth, and rest rooms in the center. Seating space, built up as a concrete patio, is located on either side of the refreshery. A stage and playground are under screen.

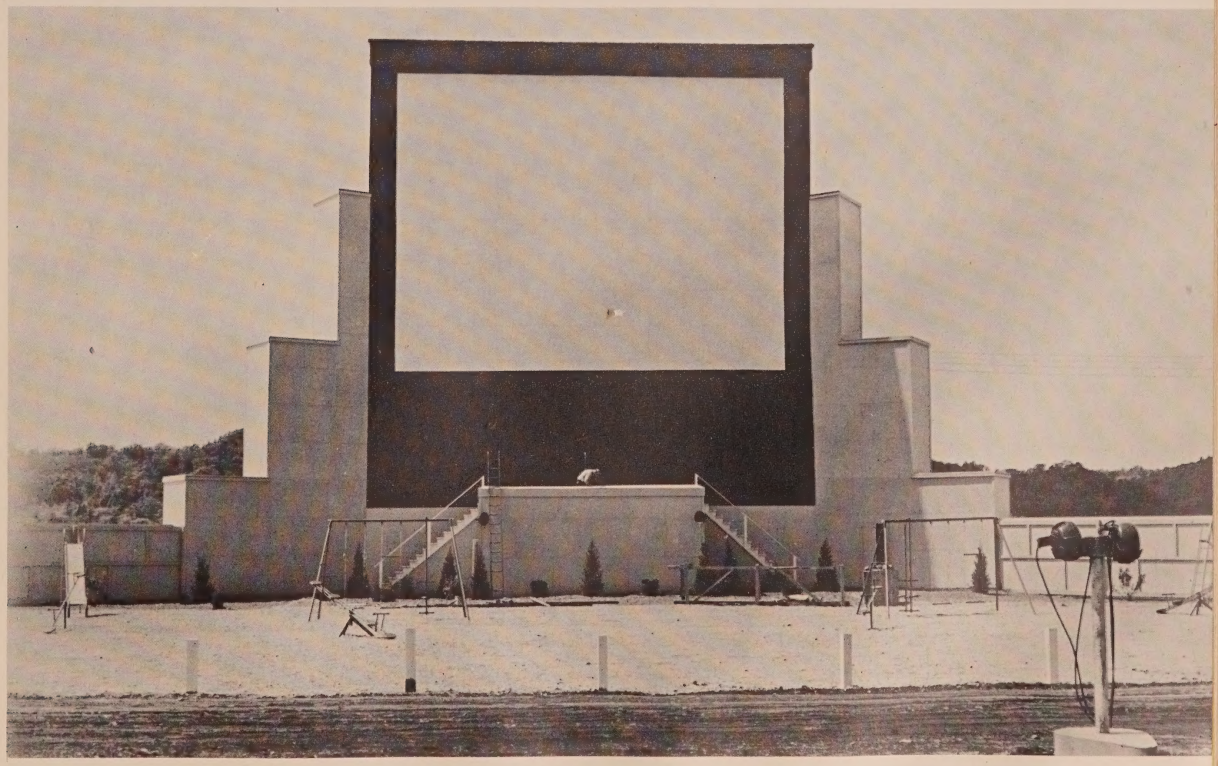


REFERENCE DATA

OWNER: R. L. Gaines, Gene Bickers, Harry Berge, William Gentry.
OPERATOR: Walter L. Wood.
ARCHITECT: Plans furnished by Motiograph, Inc.
CAR CAPACITY: 700.
COST OF BUILDING: Approx. $70,000.
COST OF EQUIPMENT: Approx. $40,000.

Chairs: Game-Time, Inc.
Generators: Motiograph, Inc. Hi-Power.
In-Car Speakers: Motiograph, Inc.
Lenses: Kollmorgen Optical Corp. F 1.9.
Projection Lamps: Motiograph, Inc.
Projection Machines: Motiograph, Inc. AA.
Rewinders: Goldberg Bros., Wenzel Projector Co.

Screen Coating: Drive-In Theatre Mfg. Co.
Sign & Marquee: William J. Rueff Sign Co.
Sound: Motiograph, Inc.
Supply Dealer: Falls City Theatre Equip. Co.
Ticket Issuing Machine: General Register Corp.
Ticket Chopper: GoldE Mfg. Co.



LITTLE DIXIE AIRWAY •

Mexico, Mo.

Situated on Highway 54 just outside of town, the Little Dixie Airway is one of the largest of its type in the central section of Missouri.

Entrance to the theatre is made over a smoothly surfaced driveway that runs past the rear of the huge screen tower. This surface has been covered with sheathing and has a lighted pylon extending to the top. Under the attraction board are doors to office and storage space within.

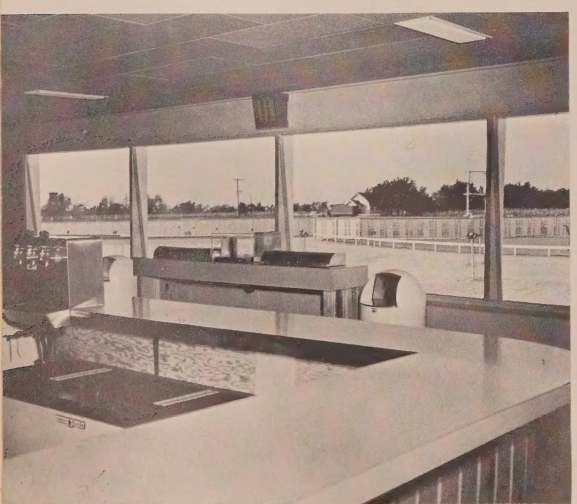
Rest rooms, concession stand, and projection booth are located in a single structure whose interior color scheme is blue trimmed with grey. Playground apparatus has been set up under screen.

REFERENCE DATA

OWNER & OPERATOR: Frisina Mexico Theatres Co.
CAR CAPACITY: 500.
SIZE OF LOT: 15 acres.

Generators: Hertner Electric Co.
In-Car Speakers: International Projector Corp. Simplex.
Projection Lamps: J. E. McAuley Mfg. Co. Peerless Magnarc.
Projection Machines: International Projector Corp. Simplex X-L.
Sign & Marquee: C. Bendsen Co.
Sign Letters: Theatre Specialties, Inc.
Sound: International Projector Corp.
Supply Dealer: National Theatre Supply.

THE ENTRANCE DRIVE, which leads to an "island" boxoffice, has a large holdout area to keep overflow cars off highway until space is available inside. BELOW: The snack bar counter is paneled in knotty pine and has a yellow top. A picture window permits a clear view of the screen.



THE PLAYGROUND EQUIPMENT under the screen tower provides many hours of happy diversion for the younger patrons of the theatre. Their parents may sit out in warm weather on the concrete patio in front of the concession building, or their older brothers and sisters may dance there.

KENO FAMILY •

Kenosha, Wisc.

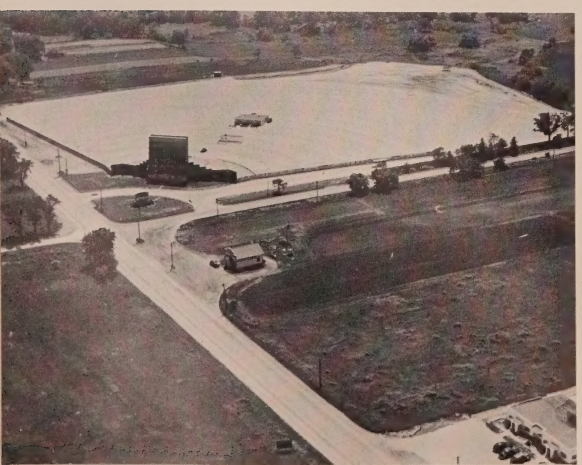
Located one mile south of the city limits, this drive-in was opened May 18, 1949, as a family recreation center. Second-run pictures primarily are shown.

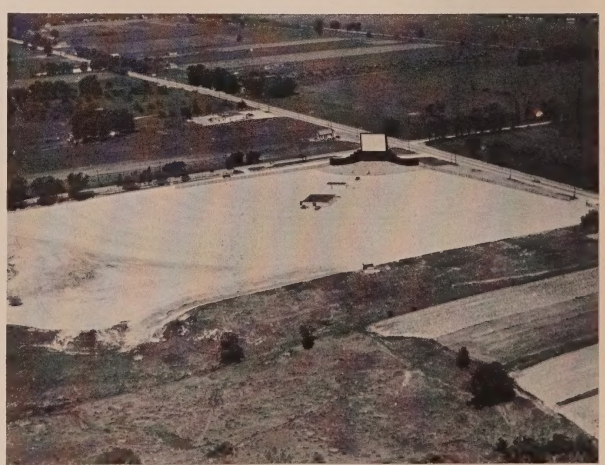
Entering patrons drive past a large attraction board surrounded by a rustic fence as they approach the boxoffice. Cars may use either two, three, or four lanes.

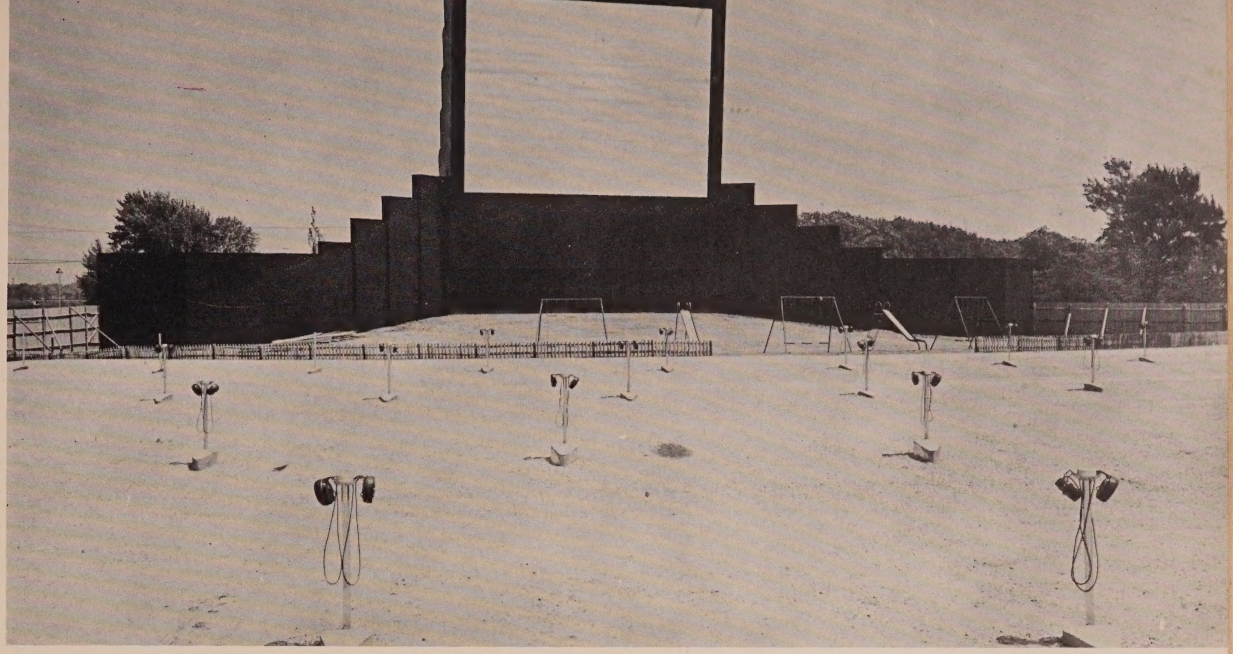
The 13-ramp parking arena has a hold-out area for 500 cars in the rear. The refreshment stand and rest rooms are housed in one building and the projection booth in another.

In addition to conventional recreation equipment, the theatre provides both train and pony rides for children.

A LIGHTED ARROW points the way to an entrance drive which leads to an island boxoffice with rustic fencing on either side that is also visible in aerial views. The small lane at the right of the drive may be used to turn out cars that develop mechanical trouble.







REFERENCE DATA

OWNER: Papas, Papas & Spheeris.
OPERATOR: S. J. Papas.
ARCHITECT: Louis A. Arru.
CAR CAPACITY: 850.
SIZE OF LOT: 24 acres.

Generators: Motiograph, Inc.
In-Car Speakers: Motiograph, Inc.
Lenses: Kollmorgen Optical Corp. F 1.9.
Playground Equip.: Miniature Train Co.
Projection Lamps: Motiograph, Inc.
Projection Machines: RCA.
Rewinders: GoldE Mfg. Co.
Sign Letters: Adler Silhouette Letter Co.
Sound: RCA.
Supply Dealer: Abbott Theatre Equip. Co., Gardner Theatre Equip. Co.

RECREATION OR RELAXATION may be found in a diversity of ways at the Keno Family Drive-In. Children may amuse themselves on the playground apparatus, take a pony ride, or go for a ride on the miniature train, while their parents may relax comfortably on the planted veranda.

PYRAMID •

Beaumont, Tex.

Opened July 28, 1950, the Pyramid is undoubtedly one of the most unusual drive-ins to open in recent years.

A pyramid of stainless steel serves as a facade for the screen. The brace of the tower supports the picture side, and the angle of the pyramid breaks the wind valence on the opposite side. Entire screen tower is painted in bright, contrasting colors over transite and aluminum.

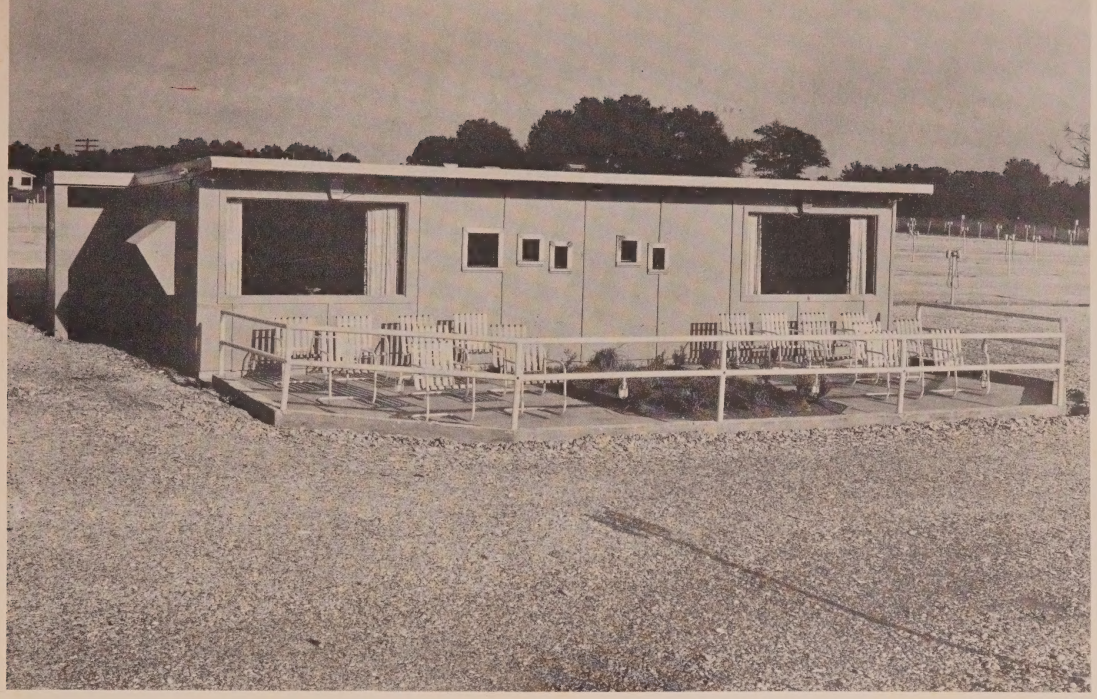
A holdout area for 75 cars is provided off the entrance drive, and seating for 200 walk-in patrons is supplied.

Two other important assets are an attractive snack bar and a playground.

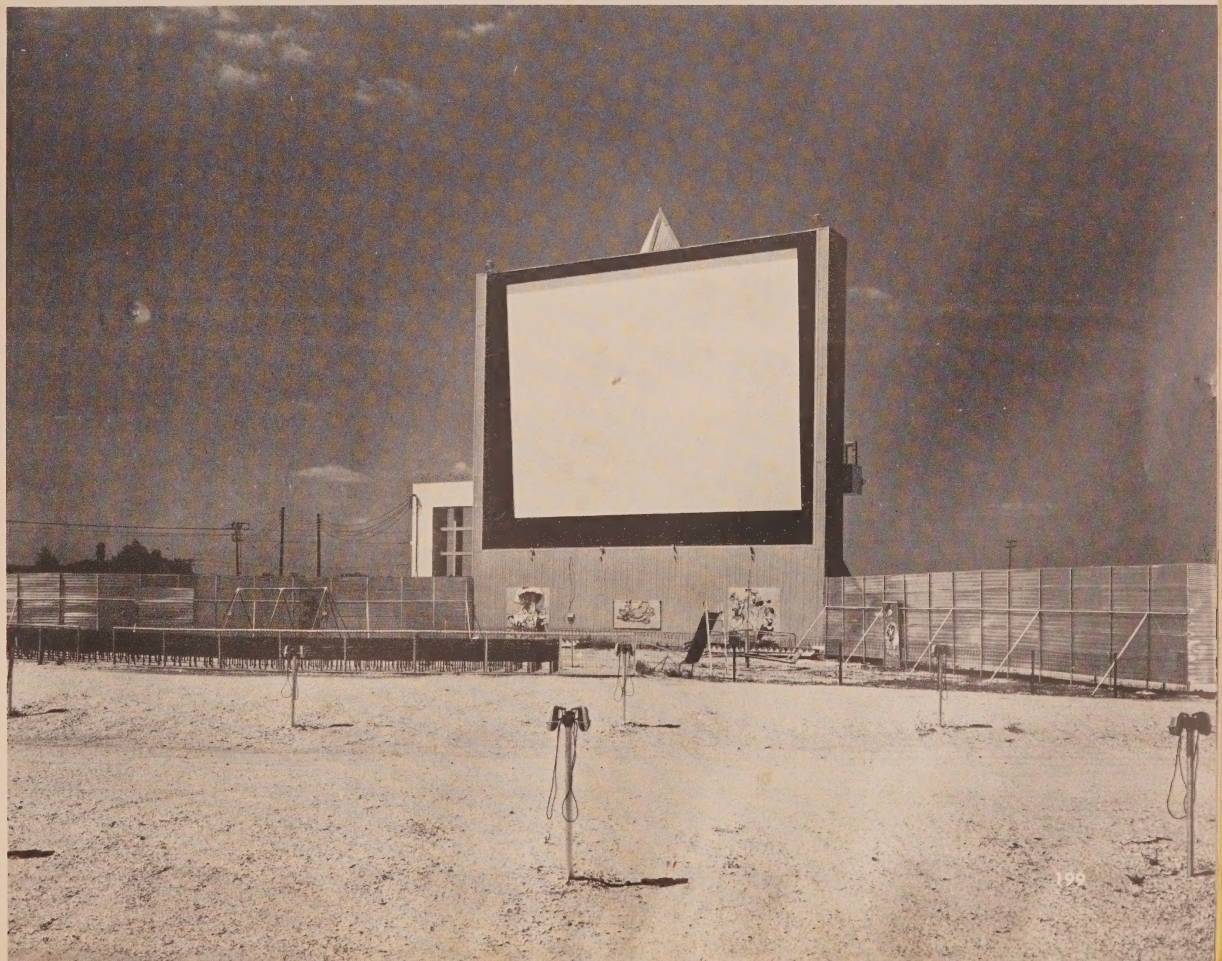
REFERENCE DATA

OWNER & OPERATOR: Pyramid Theatres, Inc.
ARCHITECT: Elwood Reamis.
CAR CAPACITY: 600 plus 250 chairs.
COST OF BUILDING: $150,000.
COST OF EQUIPMENT: $35,000.
SIZE OF LOT: 12 acres.

Generators: Century Electric Co.
In-Car Speakers: RCA.
Projection Lamps: RCA.
Projection Machines: RCA.
Sound: RCA.
Supply Dealer: Southeastern Theatre Equip. Co.



IN FRONT OF THE CONCESSION BUILDING, which also includes the rest rooms and projection booth, is a planted patio for patron relaxation while enjoying the wares sold inside. BELOW: Cartoon murals delight children using the playground equipment. Seats for walk-ins are in foreground.



SEQUOIA AUTO •

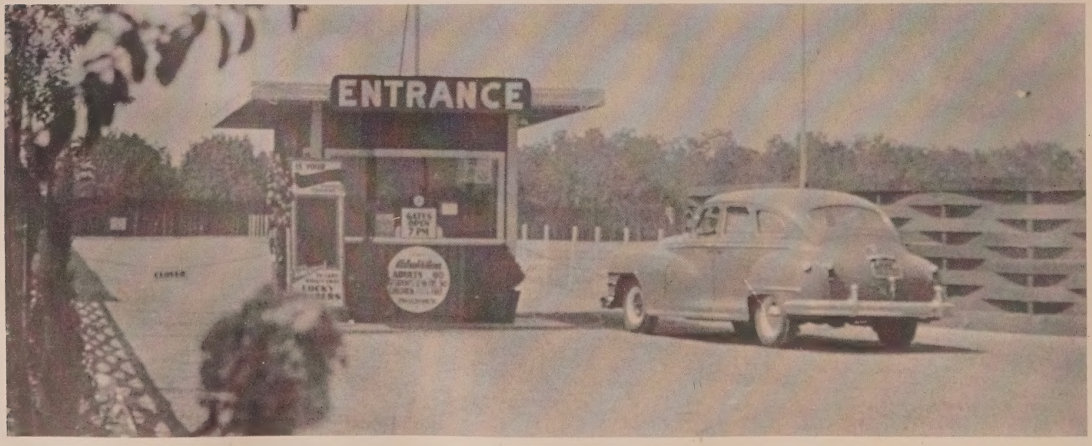
Visalia, Calif.

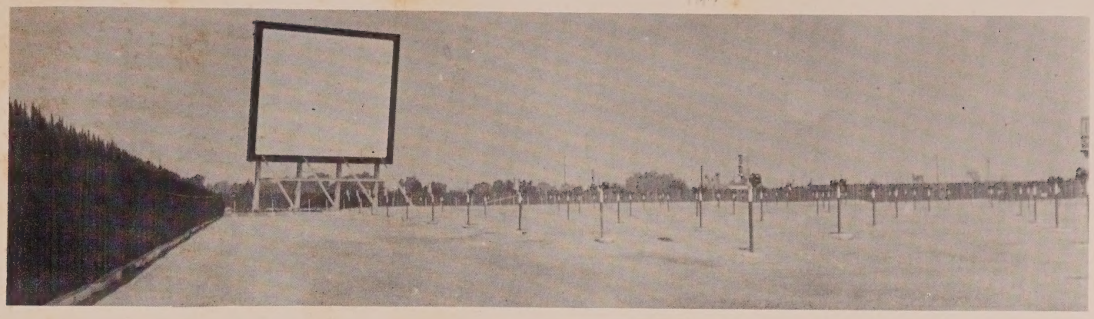
Located a short distance east of Visalia on Highway 198, this drive-in was opened July 28, 1950. Subsequent-run pictures are shown to a populace of 25,000.

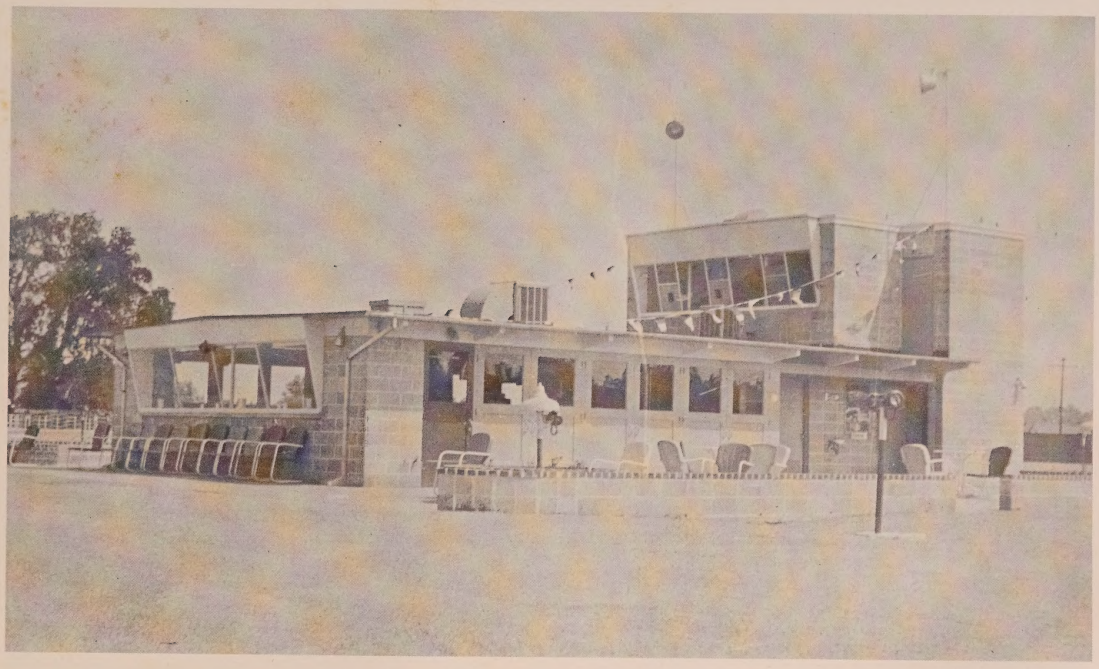
The entrance to the theatre is neatly landscaped with an enormous attraction board bearing an electric sign set up near the highway.

The projection booth sits on top of the building containing the rest rooms and concession stand. At the rear of the field is a playground and pony ride circle.

HEADLIGHTS OR NOISE OF PASSING CARS never disturb patrons in the theatre, for the parking area is set back 2,000 feet from the entrance, pointed out by the illuminated arrow beneath the large attraction board. The "island" boxoffice, the signs, and the "weave" fence are all of redwood. On the front of the boxoffice are listed the admission prices, which run from 60c for adults to 30c for students. Children are admitted free.





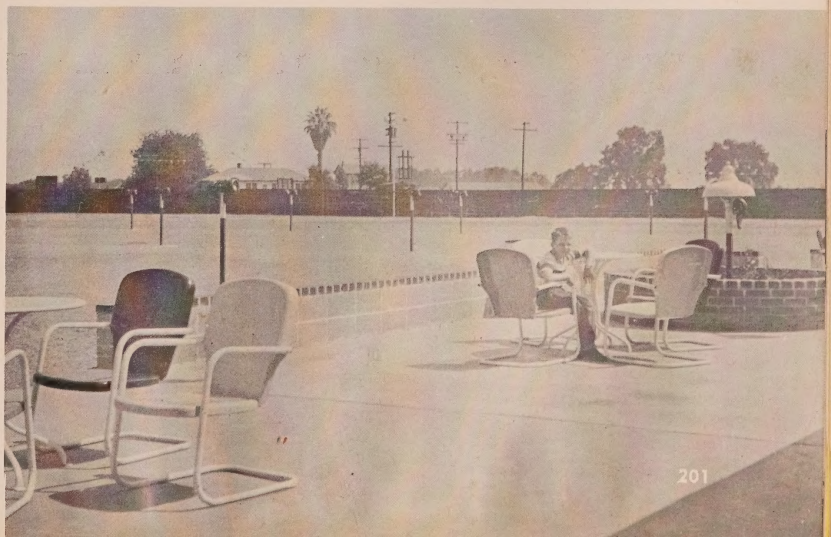


AROUND THE CONCESSION BUILDING runs a patio with comfortable metal chairs and tables where patrons may relax on warm evenings to enjoy a bite purchased at the spacious snack bar within. Those inside buying food and drinks may continue to watch the show through a visual glass front that affords a perfect view of the screen. The projection booth, which has been cleverly set atop the refreshment building, has a 400' throw.

REFERENCE DATA

OWNERS: John R. Fredericks, Gerald Harvey, Chas. Pease, Rotus Harvey.
OPERATOR: Westland Theatres.
ARCHITECT: Vincent G. Raney.
CAR CAPACITY: 500.
SIZE OF LOT: 12 acres.

In-Car Speakers: Motiograph, Inc.
Lenses: Bausch & Lomb Optical Co. F 2.0.
Projection Lamps: C. S. Ashcraft Mfg. Co.
Projection Machines: Motiograph, Inc. AA.
Rewinders: GoldE Mfg. Co.
Sign Letters: Theatre Specialties, Inc. Bevelite.
Sound: Motiograph, Inc.
Supply Dealer: B. F. Shearer Co.



EATONTOWN •

Eatontown, N. J.

Designed as the hub of a new community shopping-entertainment center, the Eatontown was opened April 21, 1950. Subsequent-run pictures are changed three times each week.

Near the entrance stands a "V-shaped", two-sided attraction board with wood letters and neon lighting. A shorter pylon opposite is of wood and neon also.

The entrance drive leads to twin green boxoffices with a canopy overhead. Rustic fencing at sides is used throughout.

A center building of cinder block houses the concession stand, projection booth, and rest rooms. Doors in front of the refreshment area open up on a terrazzo apron with tables and chairs.

Special features include a playground, monkey village, picnic area, television installation, and in-car heaters.

THE SMOOTH TERRAZZO APRON in front of the refreshery section of the central building, which contains the projection booth and rest rooms also, offers an inviting vantage point from which to watch the show while eating. Visible on some speaker posts are the theatre's in-car heaters.

REFERENCE DATA

OWNER & OPERATOR: Walter Reade Theatres, Inc.
ARCHITECT: Leon Einhorn.
CAR CAPACITY: 800.
COST OF BUILDING: Over $150,000.
SIZE OF LOT: 20 acres.

Generators: Imperial Electric Co.

In-Car Heaters: National Heater Co.

In-Car Speakers: International Projector Corp.

Projection Lamps: C. S. Ashcraft Mfg. Co.

Projection Machines: International Projector Corp. Simplex.

Sign Letters: Manhattan Wood Letter Co.

Sound: Motiograph, Inc.

Supply Dealer: Joe Hornstein, Inc.; National Theatre Supply.

Ticket Issuing Machine: General Register Corp.

Vending Machines: Orange Crush; Manley, Inc.

NOT ONLY THE ENTRANCE, but the entire theatre has been neatly landscaped with lawns, trees, and shrubs. BELOW: Seen here are 20 chairs and a special speaker for walk-ins in front of projection booth.

CARO •

Caro, Mich.

Located one mile northeast of town on Route 81, the Caro was opened May 13, 1950. Single features are mainly shown, but on Friday and Saturday there are two.

A giant screen tower near the entrance is beautifully decorated with rose, green, and yellow neon. The 20′ attraction board is lighted with yellow flashing border lights, in addition to the illumination behind the copy.

The boxoffice is knotty pine and includes office space for the manager. The over-hanging roof partially shelters car-hops on bad nights and is neon-lighted.

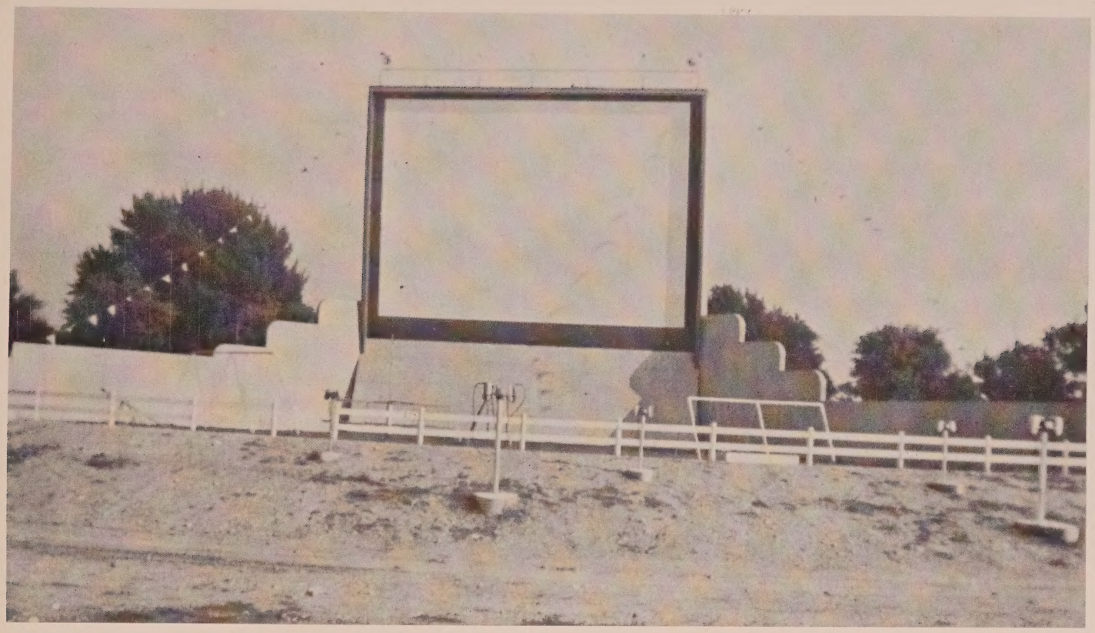
A combined concession-projection building contains rest rooms on each side. The snack bar counter is knotty pine.

A well-equipped children's playground has been set up under the broad screen.

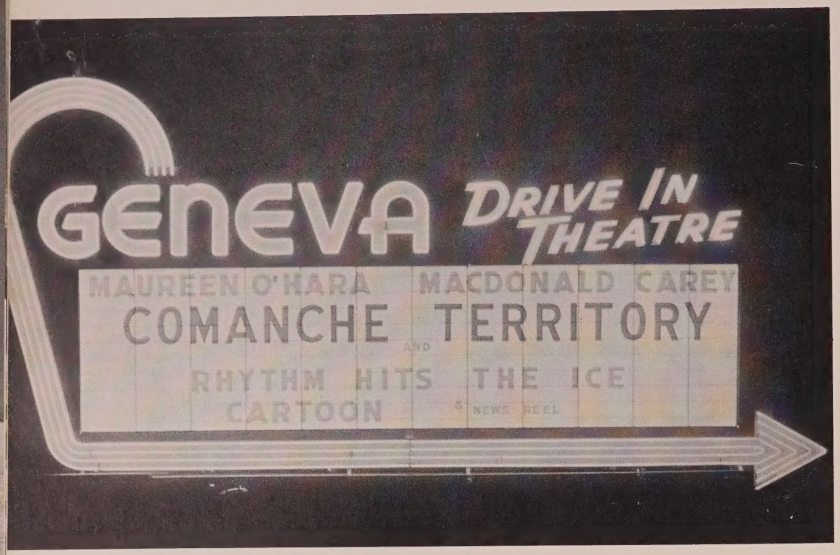
REFERENCE DATA

OWNER & OPERATOR: Ashmunn Theatres.
CAR CAPACITY: 500.
COST OF BUILDING: $40,000.
COST OF EQUIPMENT: $25,000.
SIZE OF LOT: 12 acres.

Generators: Century Electric Co.
In-Car Speakers: RCA.
Projection Lamps: RCA.
Projection Machines: RCA.
Rewinders: GoldE Mfg. Co.
Sign & Marquee: Horstman Sign Co.
Sign Letters: Wagner Sign Service, Inc. 10″ Red plastic.
Sound: RCA.
Supply Dealer: "Ernie" Forbes Theatre Supply.



UNDER THE TALL SCREEN TOWER, whose size can also be appreciated by its prominence in the aerial view of the theatre grounds below, is a playground area outfitted with a large variety of equipment for the benefit of juvenile patrons. This is a very popular feature of the Caro.



GENEVA •

San Francisco, Calif.

Built on the site of a former midget auto race track, the Geneva was opened June 15, 1950. Top product is shown 28 days after downtown San Francisco runs for an adult admission of 75c.

A dominant feature at the entrance to this unique drive-in is a gigantic attraction board with 17″, 10″, and 4″ colored plastic letters.

The steel grandstand inside, which formerly was occupied by noisy auto racing enthusiasts, is now used as seating space for walk-in patrons or others.

Under the grandstand are tucked the projection booth, refreshment stand, and rest rooms. Their arrangement is both ingenious and compact.

Since the distance from the booth to the screen, which is built on the center of the outside fence, is about one-tenth of a mile, a serious projection problem, aggravated by a misty fog blowing in from the bay nearby, was present at first. It was solved, however, with powerful carbons and a new 4-inch lens.

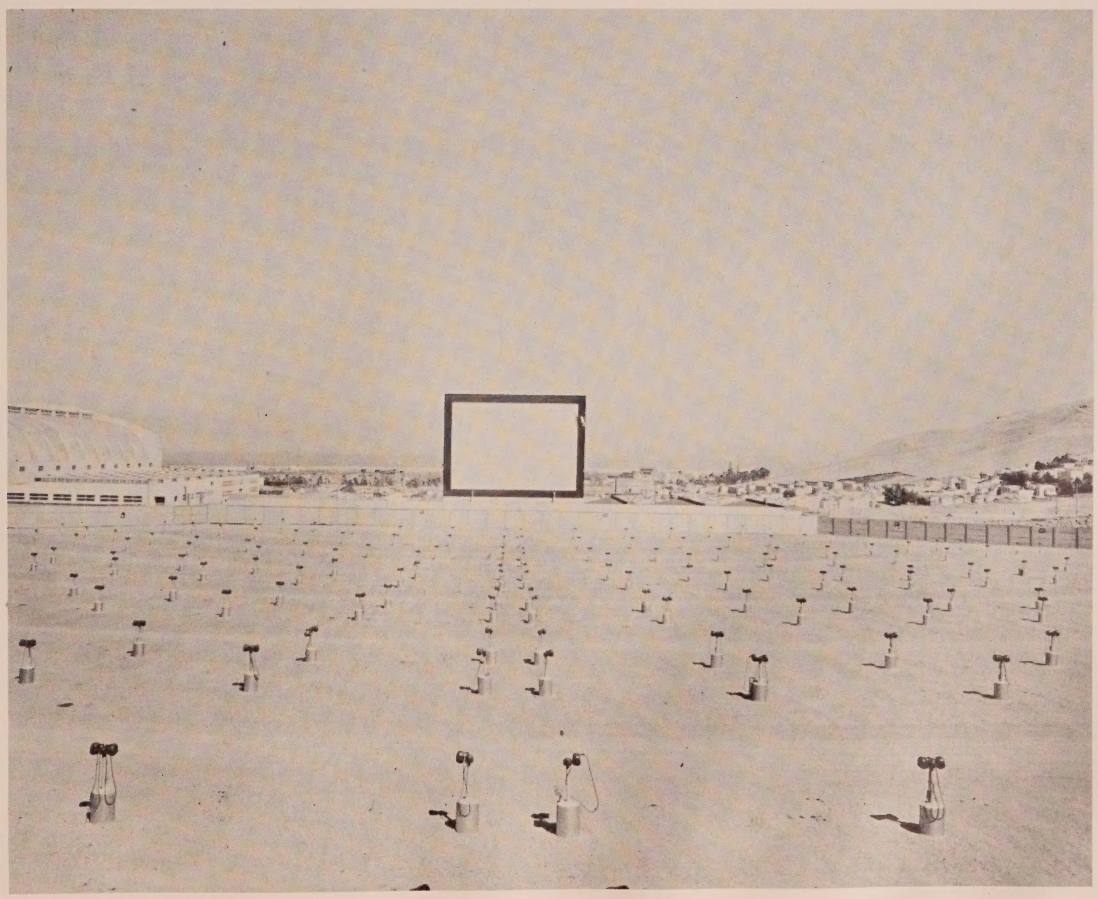
AN UNMISTAKABLE GUIDEPOST, a brilliantly lighted arrow points the way into the theatre at night on the massive entrance attraction board. BELOW: A smooth ramp surfacing has been laid here over what was once a dusty race course for the daredevils of the midget auto speedways.

REFERENCE DATA

OWNER: Bay Cities Amusements, Inc.
OPERATOR: George & Ray Petersen.
ARCHITECT: Barnard Nobler.
CAR CAPACITY: 771.
COST OF EQUIPMENT: $22,600.
SIZE OF LOT: 10 acres.

Generators: Motiograph, Inc.
In-Car Speakers: Motiograph, Inc.
Lenses: Bausch & Lomb Optical Co.
Projection Lamps: C. S. Ashcraft Mfg. Co.
Projection Machines: Motiograph, Inc. AA.
Rewinders: GoldE Mfg. Co.
Sign & Marquee: Q.R.S. Neon.
Sign Letters: Wagner Sign Service, Inc. 4", 10", 17" plastic.
Sound: Motiograph, Inc.
Supply Dealer: B. F. Shearer Co. of Calif.
Ticket Issuing Machine: General Register Corp.

AT THE REAR OF THE RAMP AREA and under a now quiet grandstand, which previously held exuberant throngs of auto race spectators, is the projection booth. Although 512' back from the screen, it throws a 61' picture on the latter. Refreshment stand and rest rooms are here also.



CENTRALIA •

Centralia, Ill.

Opened April 20, 1950, the Centralia is located one-half mile from town in a commercial residential area. Pictures are shown 30 days after downtown runs.

The entrance to the theatre is marked by a sign with a lighted directional arrow. Patrons proceed past a large attraction board, surrounded by a white picket fence, around behind the sloped rear of the screen tower, and on inside.

In a fenced-off enclosure, which contains ample seating space for walk-in and refreshment stand patrons, is a building housing the projection booth, concession area, and rest rooms.

Under the screen is an inviting playground with animated figures on the back wall. A pseudo-stone and galvanized iron fence surrounds the entire parking field.

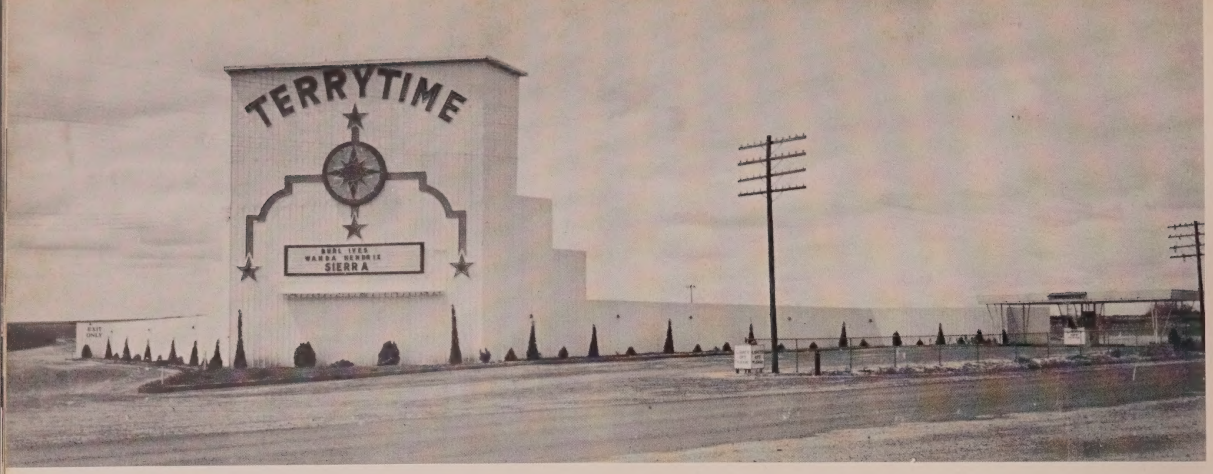
REFERENCE DATA

OWNER & OPERATOR: Elbert W. Butler & Homer S. Butler, Jr.
DESIGNER & BUILDER: Elbert W. Butler & Homer S. Butler, Jr.
CAR CAPACITY: 530 plus 150 seats.

COST OF BUILDING: $100,000.
COST OF EQUIPMENT: $22,000.
SIZE OF LOT: 10 acres.

Generators: Century Electric Co.
In-Car Speakers: RCA.
Lenses: Kollmorgen Optical Corp.

Projection Lamps: RCA.
Projection Machines: RCA.
Screen Tower: Rilco Laminated Products, Inc.
Sound: RCA.
Supply Dealer: St. Louis Theatre Supply Co.



TERRYTIME •

Woodward, Okla.

Situated on combined Highways 15 and 270 a mile west of the city limits, the Terrytime was opened April 25, 1950. First-run pictures are shown for an adult admission of 40c (10c for children).

The screen tower facing the highway at the entrance is painted white. Blue neon has been used in the theatre name, and other lighting around it is amber, rose, green, and orange.

As one drives past the "island" box-office into the parking area, his eye is immediately drawn to the low white building which contains the snack bar, projection booth, and rest rooms.

In the area under the screen is a closed-off playground for children.

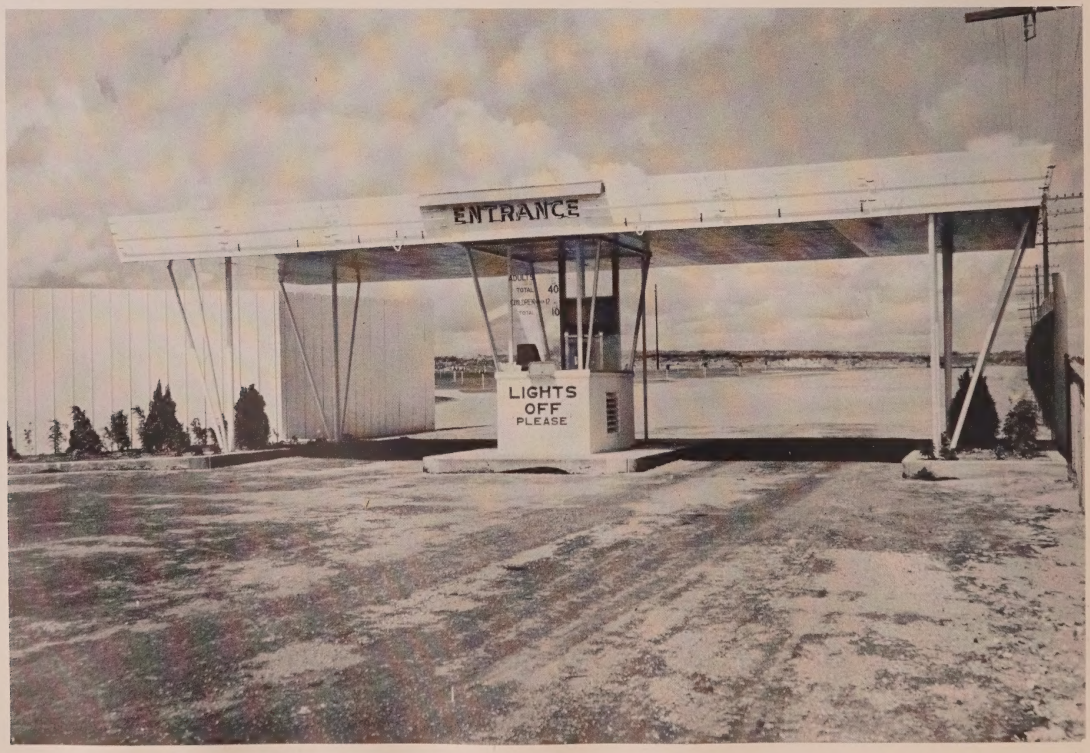
REFERENCE DATA

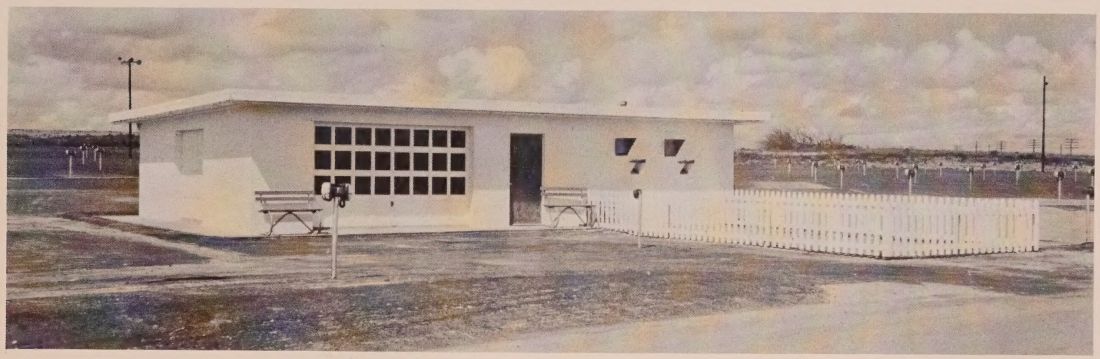
OWNER & OPERATOR: D. V. & Ben Terry.
ARCHITECT: Eldon Peek.

CAR CAPACITY: 416.
COST OF BUILDING: $40,000.
COST OF EQUIPMENT: $20,000.
SIZE OF LOT: 11 acres.

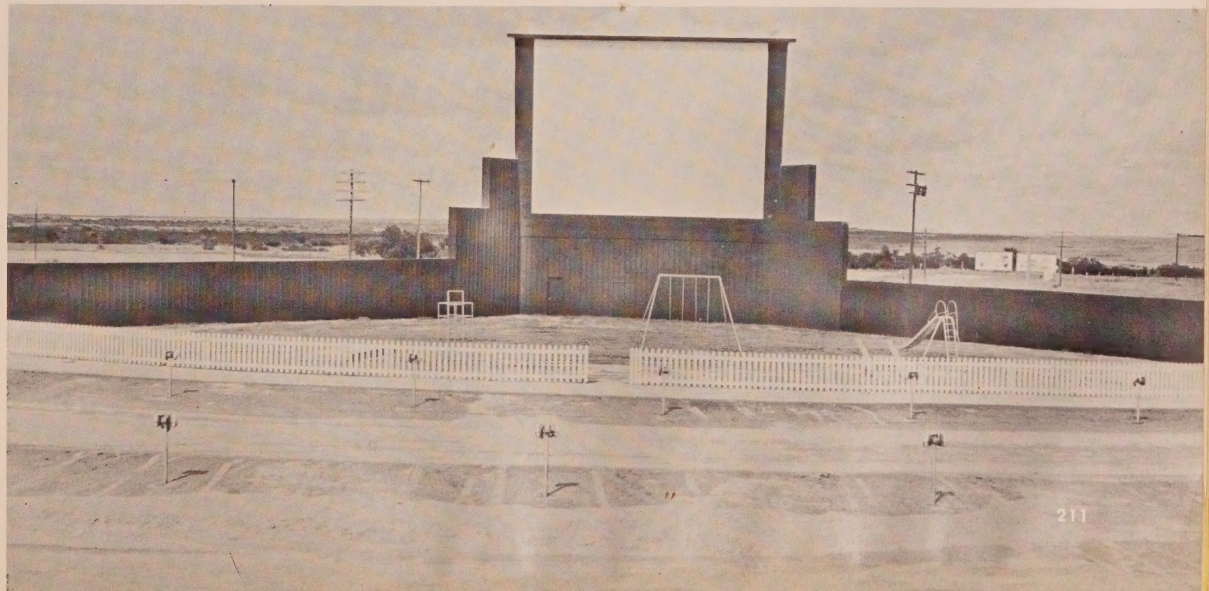
In-Car Speakers: RCA.
Projection Lamps: RCA.
Projection Machines: RCA.
Rectifiers: RCA.
Sign Letters: Theatre Specialties, Inc. 17" Bevelite.
Sound: RCA.
Supply Dealer: Okla. Theatre Supply.

CARDINAL POINTS OF INTEREST at the entrance are the unusual geometric design on face of the screen tower and the precise planting of shrubs all along the fence enclosing the parking area. A close-up view of this orderly planting is seen in the photo of the canopy-covered boxoffice.





SLIDING PANELS AT THE FRONT enable the concession stand to be opened up completely for easier patron access and better view of the screen. The bar itself is natural wood, while rear wall is paneled in knotty pine. **BELOW:** a shot of the fenced-off playground area under the screen.



LOST RIVER •

Bowling Green, Ky.

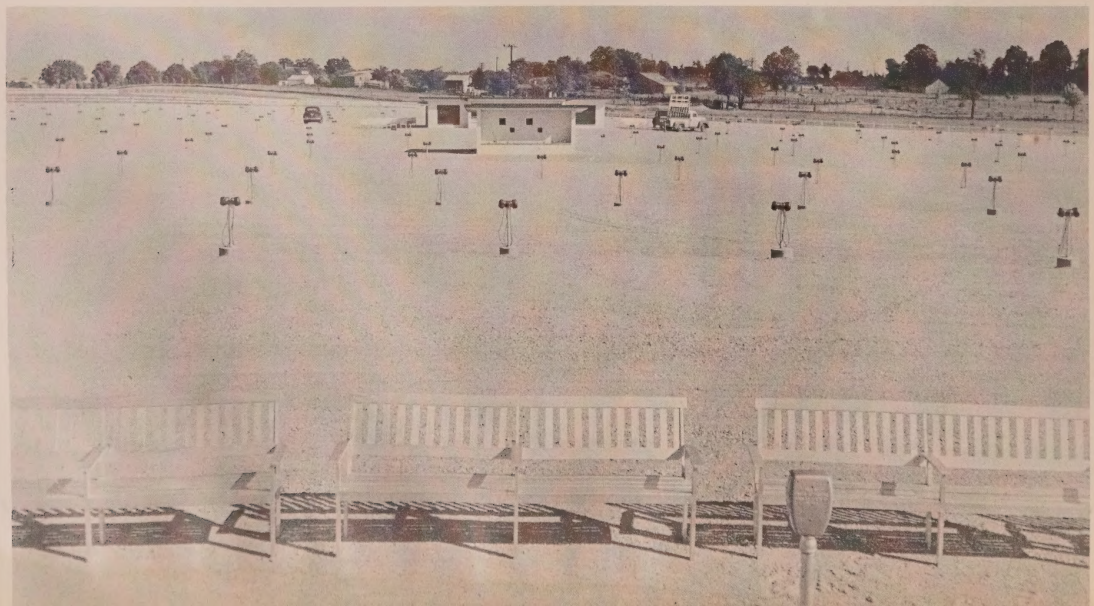
A first-class drive-in produced on a limited budget, the Lost River was opened May 24, 1950. It is patronized by a sizeable town and rural populace.

Entering cars drive past a large attraction pylon and through an arched entrance way. A holdout area for 200 cars has been provided.

The dual driveway leads past an "island" boxoffice into a spacious parking area. In the middle is the refreshment building with rest room and projection facilities nearby. The front is glass-paneled, and a patio with chairs is on either side.

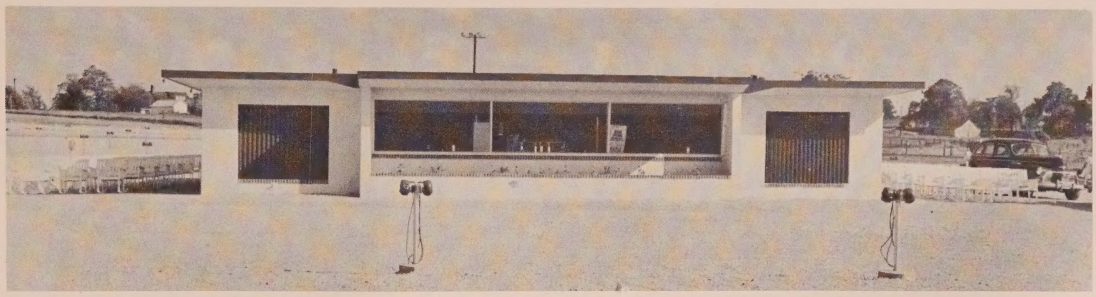
A playground with several pieces of equipment is set up near the screen.

ATTRACTIONS ARE CLEARLY VISIBLE to passersby on the display boards secured to the concrete-block and stucco pylon. Some distance down the double entrance drive is an attractive boxoffice protected by a canopy. **BELOW:** A frontal view of the concession and projection buildings.



SIDE WINGS OF THE PLAYGROUND AREA are enlivened by cartoon characters, and benches with sound for supervisory parents are provided.

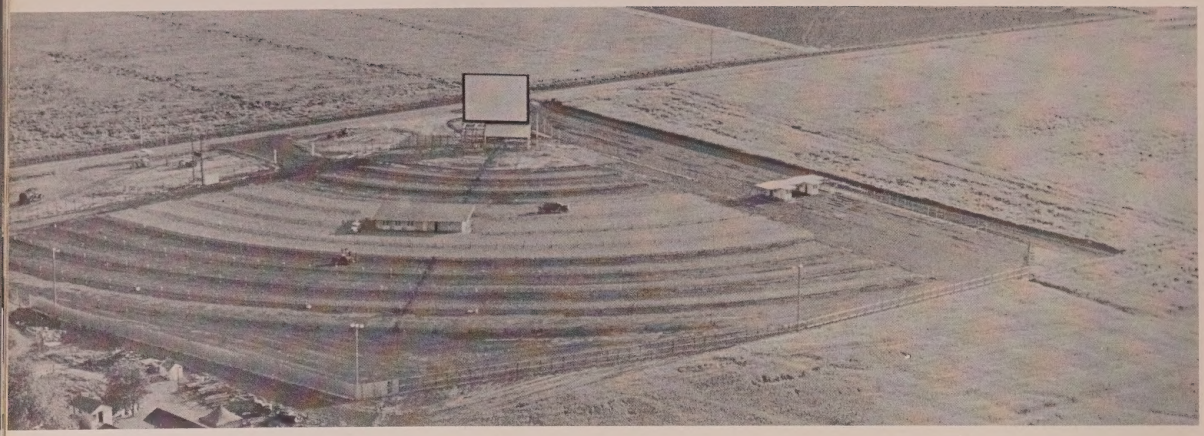
BELOW: The appealing concession building has 150 rocking chairs outside on the flanking patios and a large, glass-block refreshment bar set within.



REFERENCE DATA

OWNER & OPERATOR: Alton Rush & Davis Duff.
CAR CAPACITY: 600.
COST OF BUILDING: Approx. $85,000.
COST OF EQUIPMENT: Approx. $40,000.

Generators: Motiograph, Inc. Hi-Power.
In-Car Speakers: Motiograph, Inc.
Lenses: Kollmorgen Optical Corp. F 1.9.
Projection Lamps: Motiograph, Inc.
Projection Machines: Motiograph, Inc.
Rewinders: Goldberg Bros., Wenzel Projector Co.
Screen Coating: Drive-In Theatre Mfg. Co.
Sound: Motiograph, Inc.
Supply Dealer: Falls City Theatre Equip. Co.
Ticket Chopper: GoldE Mfg. Co.



SUNSET •

Woodland, Calif.

Located on Highway 99, the Sunset was opened April 15, 1950, and serves a drawing area population of 30,000.

Near the entrance is a large attraction board with two lines of fluorescent lighting. The driveway into the parking area, which is enclosed by a corrugated aluminum fence, leads past twin boxoffices with four traffic lanes.

The combined concession-projection building contains rest rooms also. A pony ride ring is in front of the screen area.

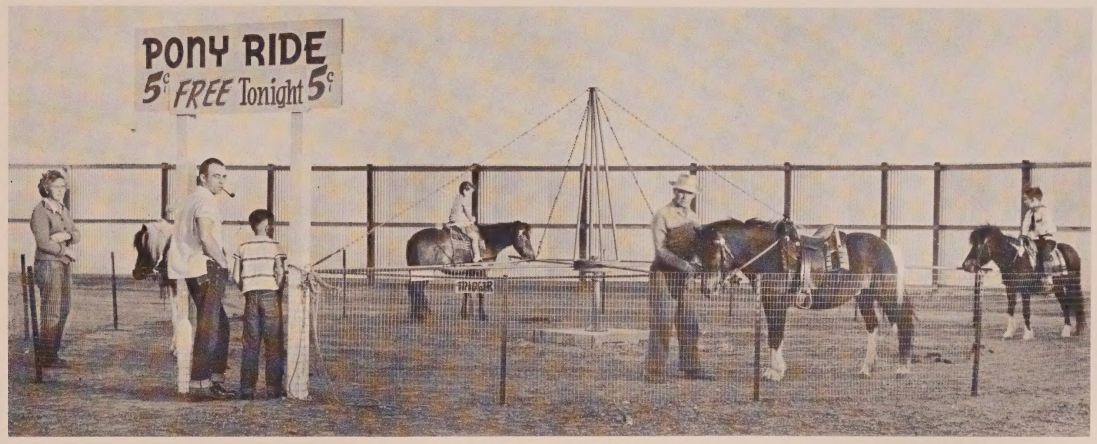
REFERENCE DATA

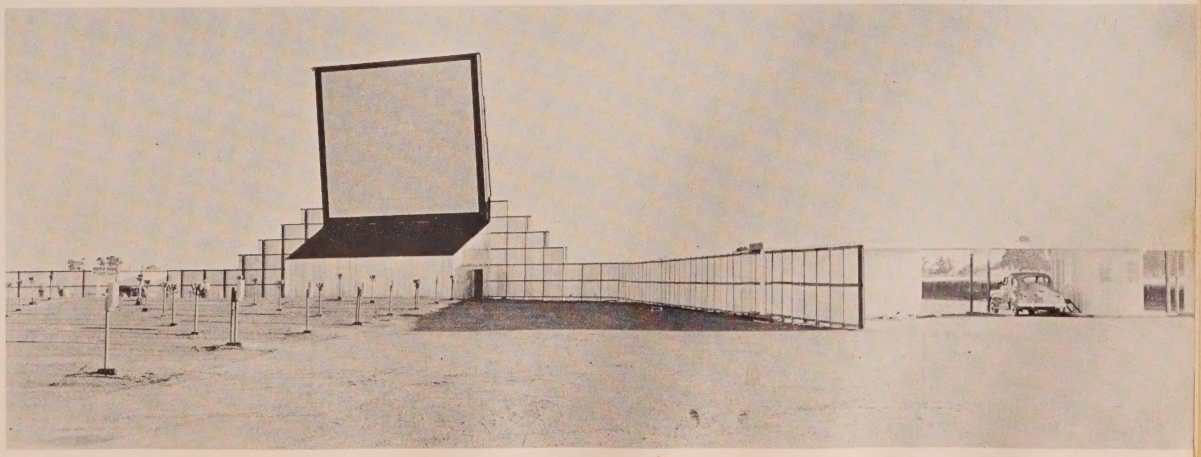
OWNER & OPERATOR: Peter J. Garrette.
DESIGNER: Harry Sarber.
CAR CAPACITY: 529.
COST OF BUILDING: $60,000.

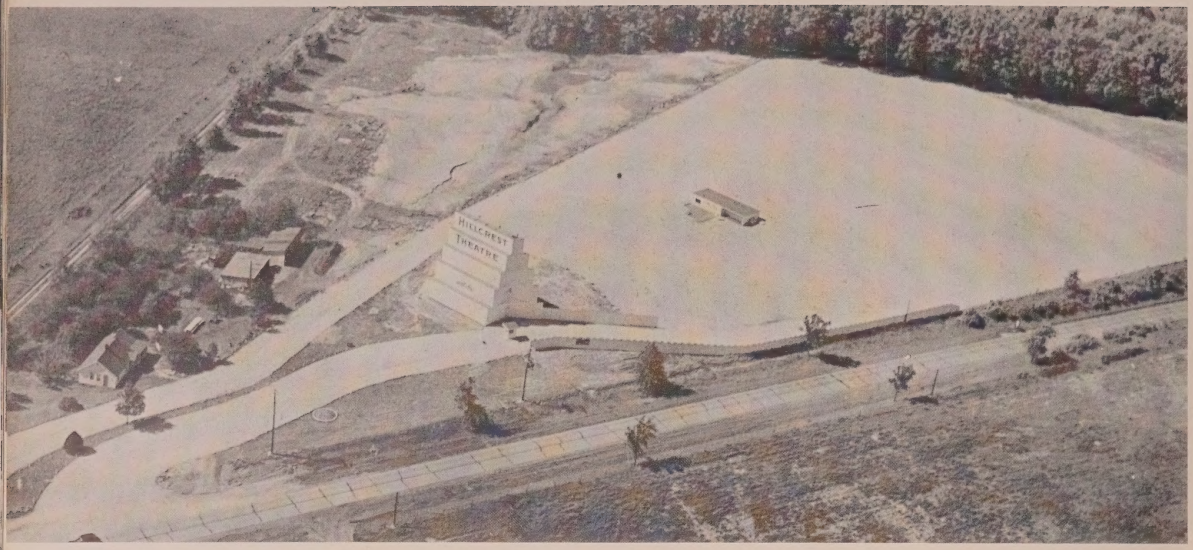
Generators: Century Electric Co.
In-Car Heaters: National Heater Co.
In-Car Speakers: Drive-In Theatre Mfg. Co.
Lenses: Kollmorgen Optical Corp.
Projection Lamps: RCA.
Projection Machines: RCA.
Rewinders: GoldE Mfg. Co.
Screen: Drive-In Theatre Mfg. Co.
Sound: RCA.
Supply Dealer: Western Theatrical Equip. Co.

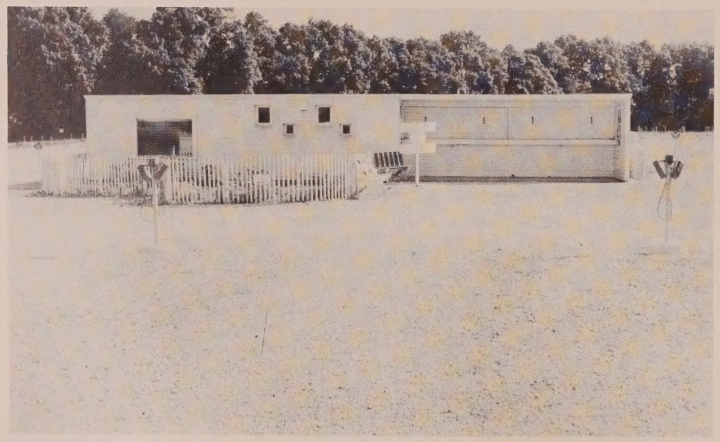
AN AERIAL VIEW of the site shows its carefully planned layout. BELOW: The twin boxoffices are of brick, wood, and glass with a canopy overhead. The concession stand opens on a concrete patio with chairs for open-air eating comfort.

THE MODERNISTIC SNACK BAR is equipped to serve hot dogs, popcorn, coffee, candy, etc., in an efficient manner. The building itself is cement block with combed plywood partitions. BELOW: The pony ring is a great favorite with the children, and stable space is in the screen tower.

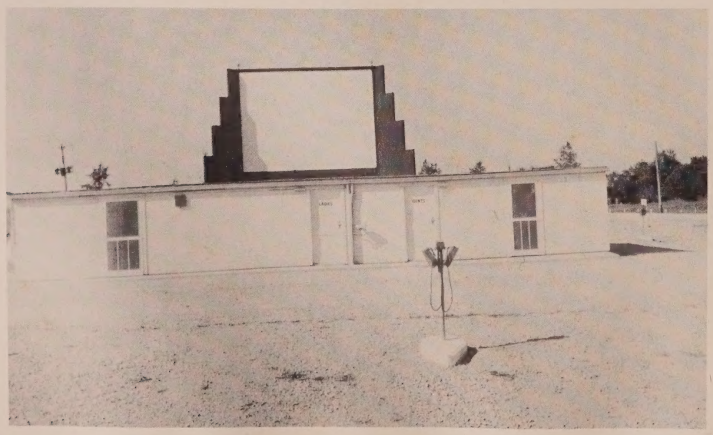








DISTINCTLY VISIBLE FROM THE AIR is the low-slung concession-projection building with a 20′ snack bar open to the screen. Entrance to the rest rooms is through doors in the rear of the white structure.



HILLCREST •

Canton, Ill.

Opened May 13, 1950, the Hillcrest is located on Route 78 a short distance out of town. Five changes a week are shown to a drawing area population of 50,000, mainly factory workers and farmers.

Entering cars approach a majestic screen tower 54′ high with the name of the theatre and attraction board beneath brilliantly lighted in neon.

After stopping at a small frame box-office, patrons then proceed past the white fence surrounding the site into the 506-car parking field.

The concession-projection building is conveniently located in the ramp area and contains rest rooms in the rear.

REFERENCE DATA

OWNER & OPERATOR: A. F. Stockberger & E. N. Tuckey.

ARCHITECT: Clifford Cardot.

CAR CAPACITY: 506.

COST OF EQUIPMENT: Approx. $56,-000.

SIZE OF LOT: 15 acres.

Generators: Hertner Electric Co.
Lenses: Kollmorgen Optical Corp. F 1.9.
Projection Lamps: J. E. McAuley Mfg. Co. Peerless Magnarc.
Projection Machines: International Projector Corp. Simplex X-L.
Rewinders: GoldE Mfg. Co.
Sign Letters: Theatre Specialties, Inc. 10″ Blue Bevelite.
Sound: International Projector Corp. Simplex.
Supply Dealer: National Theatre Supply.
Ticket Issuing Machine: General Register Corp.

COLONIAL •

Madison, Tenn.

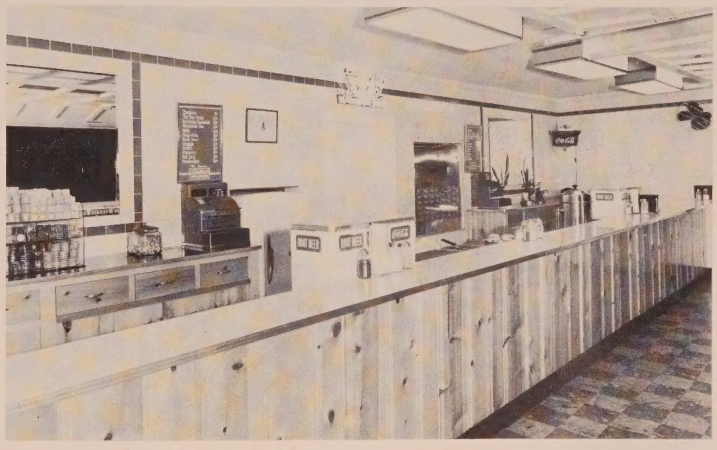
Opened April 27, 1950, the Colonial shows first and second-run pictures to a middle-class populace of 90,000.

Most impressive feature of the entrance is the highway side of the screen tower that is built to resemble a large southern colonial mansion. It is done in gray cement board with white columns.

A dual-type concession building, separate from projection booth, has cream tile walls trimmed in red, gray and red asphalt tile floor, and gray-white bar. Rest rooms are green, white, gray, and yellow.

Special features include a large hold-out area and a playground under screen.

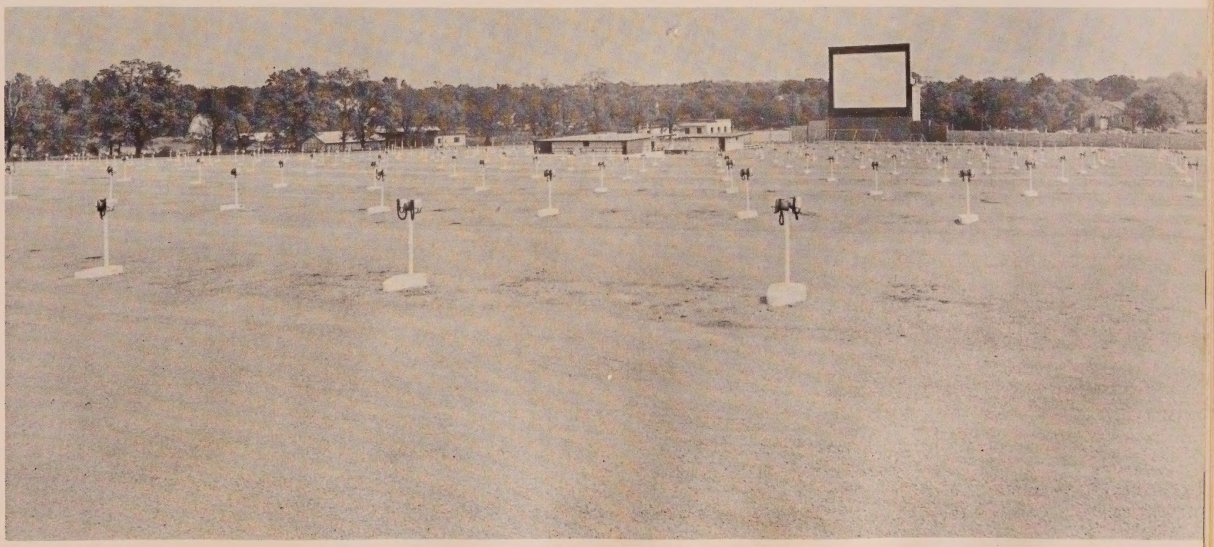
THE STRIKING COLONIAL FACADE and the attraction board at right are brilliantly lighted at night. **BELOW:** The smart concession area has a picture window overlooking a spacious concrete patio outside.



REFERENCE DATA

OWNER: Colonial Drive-In Theatres, Inc.
OPERATOR: Joe Hart & Charles Henritz.
ARCHITECT: Bryan & Dozier.
CAR CAPACITY: 600.
COST OF BUILDING: $125,000.
COST OF EQUIPMENT: $30,000.
SIZE OF LOT: 13 acres.

Generators: Century Electric Co.
In-Car Speakers: RCA.
Lenses: Kollmorgen Optical Corp. F 1.9.
Playground Equip.: American Playground Device Co.
Projection Lamps: RCA.
Projection Machines: RCA.
Rewinders: GoldE Mfg. Co.
Sign & Marquee: Post Sign Co.
Sign Letters: Wagner Sign Service, Inc.
Sound: RCA.
Supply Dealer: Monarch Theatre Supply Co.



JEFFERSON •

Dallas, Texas

One of the finest theatres in its area, the Jefferson is particularly noted for a unique design on the highway side of the screen tower. This "musical mural" is in multi-colored neon on porcelain enamel.

The entrance drive, also marked by a modernistic attraction board and tasteful landscaping, leads into paved ramp area.

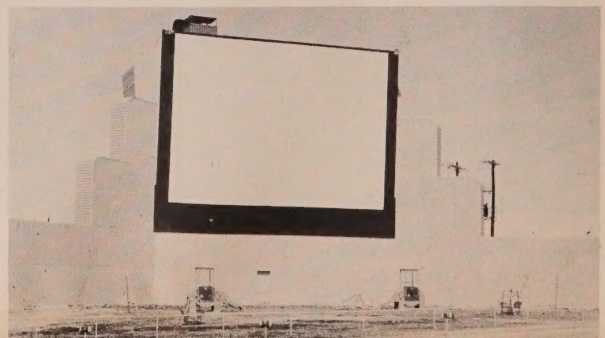
A combined concession-projection building has a de luxe snack bar and patio. A playground is under the screen area.

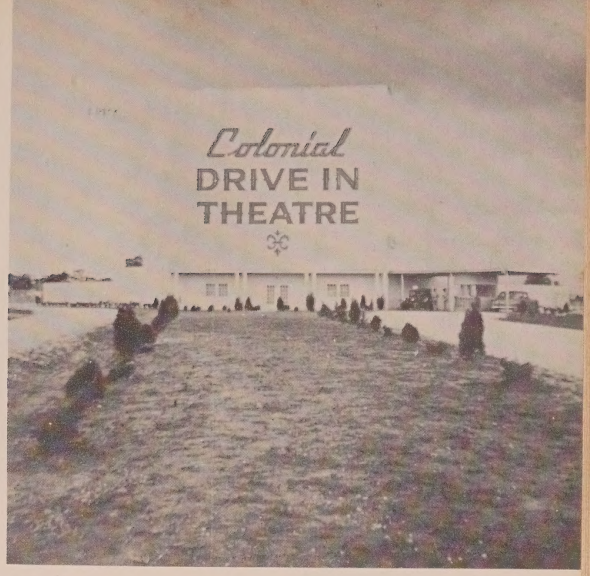
REFERENCE DATA

OWNER & OPERATOR: Harold Gibbons.
ARCHITECT: Jack Corgan.
CAR CAPACITY: 670.
COST OF BUILDING: $115,000.
COST OF EQUIPMENT: $28,000.
SIZE OF LOT: 12 acres.

Generators: Century Electric Co.
In-Car Heaters: National Heater Co.
In-Car Speakers: RCA.
Lenses: Bausch & Lomb Optical Co.
Playground Equip.: Hill's Playground Equip. Co.
Projection Lamps: RCA.
Projection Machines: RCA.
Rewinders: GoldE Mfg. Co.
Sign & Marquee: Texas Mfg. Co.
Sign Letters: Wagner Sign Service, Inc.
Sound: RCA.
Supply Dealer: Southwest Theatre Equip. Co.
Ticket Issuing Machine: General Register Corp.

DRAWING POWER of the decorative front is also apparent in the concession building with its tempting display of refreshments and 250 chairs on the patio. **BELOW:** The eye naturally follows the lines of speaker posts, which are equipped with in-car heaters, to playground.





COLONIAL •

Thibodaux, La.

Situated on Highway 69 a short distance from town, this theatre has ample eye-appeal with its colonial screen tower and beautifully landscaped grounds.

Near the junction of the entrance and exit drives a huge, double-sided attraction board has been erected. When lighted at night, it is visible for some distance to approaching motorists.

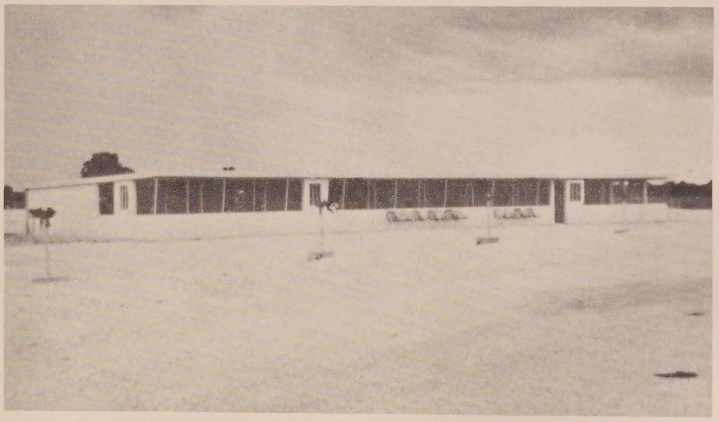
The concession building, which is entirely separated from the projection booth, has a number of tables and chairs which may be placed outside on warm nights. The front is a visual glass type.

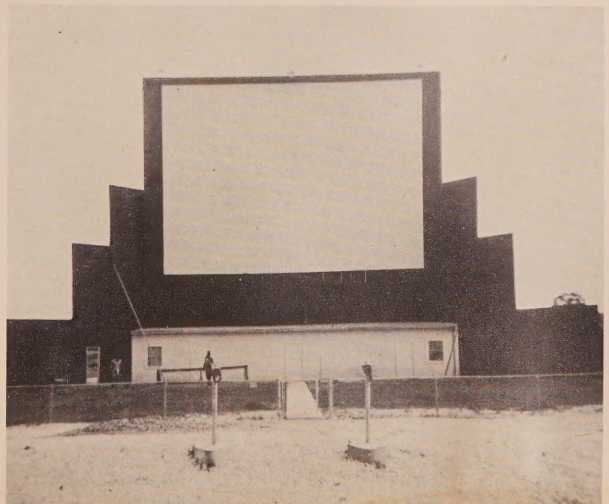
Underneath the screen is a separate enclosure which contains a small building with an apartment for the manager, his office, and a store room for keeping miscellaneous theatre supplies.

REFERENCE DATA

OWNER & OPERATOR: F. G. Prat.
CAR CAPACITY: 500.
SIZE OF LOT: 10 acres.

Generators: Hertner Electric Co.
In-Car Speakers: International Projector Corp. Simplex.
Projection Lamps: J. E. McAuley Mfg. Co. Peerless Magnarc.
Projection Machines: International Projector Corp. Simplex X-L.
Sign Letters: Theatre Specialties, Inc. Bevelite.
Sound: International Projector Corp. Simplex.
Supply Dealer: National Theatre Supply.





FAMILY •

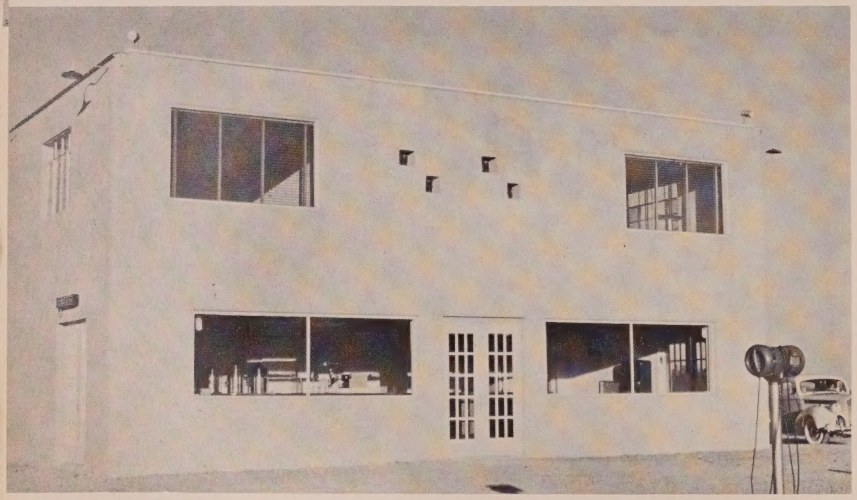
Espy, Pa.

Located on the busy Berwick-Bloomsburg Highway, the Family was opened July 26, 1950. The patronage served is mainly small-town and rural in nature.

A fair-sized, two-sided attraction board at the entrance has a lighted arrow pointing the way down the four-lane driveway that leads into the ramp area.

The most interesting feature of this drive-in is perhaps the two-story building in the parking field. The concession stand is on the lower floor, and on the second is the projection room.

Also on the upper level are a 40-seat miniature indoor theatre (left) and the offices of the theatre (right).



REFERENCE DATA

OWNER & OPERATOR: Engel Brothers.
ARCHITECT: S. Z. Moskowitz.
CAR CAPACITY: 790.
COST OF EQUIPMENT: $21,000.
SIZE OF LOT: 17 acres.

Generators: Motiograph, Inc.
In-Car Speakers: Motiograph, Inc.
Lenses: Kollmorgen Optical Corp.
Projection Lamps: C. S. Ashcraft Mfg. Co.
Projection Machines: Motiograph, Inc.
Rewinders: Wenzel Projector Co.
Sign Letters: Adler Silhouette Letter Co.
Sound: Motiograph, Inc.
Supply Dealer: Vincent M. Tate Theatre Equip.

The Unusual Fly-In Drive-In

The Air Age Overtakes the Outdoor Theatre With Special Provisions for Flying Patrons

BRIEF: *The airplane has come a long way indeed since the day the Wright Brothers launched the first airborne machine on the sandy slopes of Kitty Hawk . . . Wooden and metal "sky birds" of all types and sizes have come to populate the skies in ever-growing numbers . . . performing a multitude of tasks for modern man . . . Aside from transporting him wherever he wishes, the airplane has been widely employed to carry cargo essential to his daily life . . . and to speed delivery of his written communications . . . There are now in existence several postoffice buildings with roofs large enough to enable mail planes to land and take-off again with perfect ease.*

The idea of taking the family to the movies in a plane, however, always seemed a mythical fantasy . . . until an enterprising former flier built a drive-in theatre for use by planes as well as automobiles . . . Every facility has been provided to enable air travelers to drop out of the sky, see a show, and soar off into the ether again with perfect ease . . . This is the story of a "fairy tale" come true.

Since this New Jersey "Fly-in" theatre opened in 1948, there have been at least two others which opened in other states . . . So this historical survey seems warranted.

Until recently, the drive-in theatre as a commercial recreation enterprise concerned itself solely with inducing the American motorist and his family to hop into the family jalopy and drive to an outdoor site for a couple of hours of motion picture entertainment. It was more or less inevitable, however, that the increasing popularity of the airplane would lead theatremen to find a way to attract the entertainment dollar of the rapidly growing skyborne segment of the populace. It is significant that the first known step in this direction was taken by a former Navy flier, Edward I. Brown, Jr., who on June 3, 1948, opened both highways and air lanes to the Fly-In Drive-In Theatre at Belmar, N. J.

Movies for the Airborne

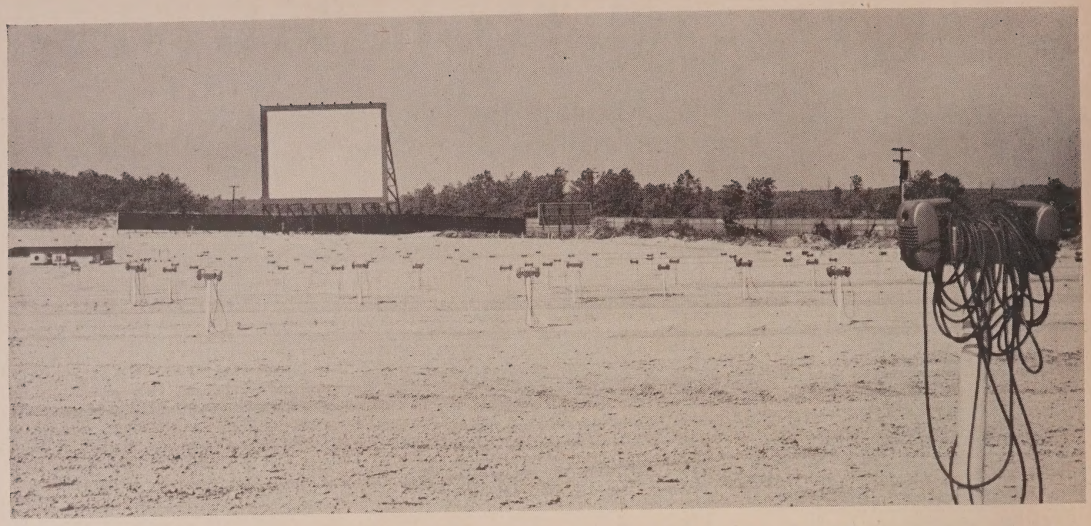
Situated near the popular southern New Jersey seashore resort of Asbury Park, the theatre has a seasonal drawing population of some 200,000 persons. Designed by Architect Claude Birdsall and built in approximately three and a half months at a cost of nearly $125,000 for buildings and equipment (does not include cost of land), the operation accommodates 500 cars on its 16 acres of ground. The really distinguishing feature of the Fly-In Drive-In, however, lies in the fact that provisions have been made to handle 15 planes on separate ramps situated behind the automobile ones. Planes come down on the adjoining Monmouth County Airport landing strip and are taxied to their parking places. Each plane is given its own speaker, and passengers view the show right from the cabin of the plane. When airborne patrons are ready to depart, a jeep service is provided to haul them back to the landing strip for a take-off.

Since opening date, the number of aircraft descending to take advantage of this unique entertainment service has averaged between eight and ten per week. Although more airborne travelers would be welcomed and taken care of efficiently, the aerial feature of the theatre has not been pushed too strongly because of the number of personnel required to handle aircraft safely.

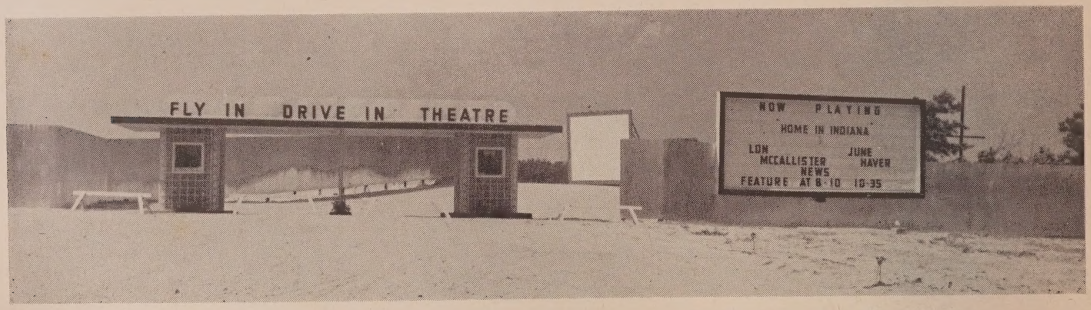
Advertising Value

In spite of the fact that the theatre's aircraft provisions have not yet in them-

AIRPLANE VIEW of the positioning of this unusual theatre in relation to its neighboring business partner, the Monmouth County Airport. From this it can be observed how planes can land from any direction, with the complete facilities of a modern airport; and can then be taxied into their ramp position.



THE FLY-IN DRIVE-IN has an orthodox ramp area that is possibly a little less ornate than most; but at the right of the picture above can be seen the unusually long speaker wires for airplane use. To the right is the confection stand and television lounge behind the ramp area and separate from the projection booth. Also the airport buildings where planes receive a good share of patron curiosity and inspection that results in a paying participation. Below are the four-lane entrance gate and large attraction board providing ample space for show selling. The patron is again reminded of the unusual facilities possessed by this theatre, and as a result good word-of-mouth publicity results for this, the Fly-In Drive-In.



selves shown a great gain in revenue, the interest aroused in the planes by the automotive public has proven itself to be of great advertising and promotional value. Although the airplane is becoming more and more common, it still holds a certain fascination for people of all ages. Scores of spectators can often be seen watching a plane overhead, and crowds frequently congregate around airports to watch planes take-off and land. The theatre-going populace, particularly its juvenile segment, is certainly susceptible to this still widespread allure of the airplane, and the coming and going of planes at the Fly-In Drive-In Theatre affords a "second" show in addition to the one on the screen. Particular interest is aroused at intermission time when the ramp area is floodlighted to show up the planes parked in the rear.

Other Facilities

Aside from its aerial patron feature, the Fly-In Drive-In is an attractive theatre in all other respects. Twin glass-block boxoffices with neon lighting mark the smoothly surfaced entrance approach to the theatre, and carefully graded gravel ramps afford all patrons a good view of the screen. A special feature among the cinder block buildings lies in the television lounge for the use of patrons arriving during the show and for those times when the ramp area is filled to capacity. The lounge, which measures 30 by 42 feet, is equipped with a three by four-foot Tradiovision screen and comfortable rocking chairs. The lounge adjoins another room which houses the actual television equipment. Although other drive-in operators have placed television sets around their theatres for advertising purposes, the Fly-In Drive-In appears to be the first outdoor showplace to construct an actual lounge room to house such a large screen television set.

CONCLUSION

Although, as the owner himself admits, a drive-in theatre for airborne, as well as automotive, patrons may be 10 to 15 years premature from a strictly dollar point of view, the publicity value, particularly to the owner of an adjoining airport, is well worth the extra expenditures and problems involved. The Fly-In Drive-In, however, may well be the forerunner of many other combined aerial-auto operations as the airplane, as a quick and easy means of transportation, comes more and more within the range of the average citizen's pocketbook.

Station System Refreshment Vending

The General Operating Essentials of a Widely Used Selling Method Are Discussed With a Specific Case

By Charles B. Blood
Star Manufacturing Company

BRIEF: ***Entertainment and eating have long been intimately linked together in the public mind . . . and the drive-in theatre has an excellent opportunity to capitalize on this natural association . . . It is not only the open air that whets the appetites of one and all to encourage refreshment sales . . . The drive-in always draws a large number of children eager for snacks.***

Concession areas . . . erected to answer the wants of hungry patrons with a neat extra profit for the drive-in theatre . . . have been operated in a number of ways . . . A notable popular method is the station system . . . whereby a customer is usually taken care of completely by one attendant . . . The following article outlines the requirements for this kind of operation . . . as exemplified by a typical stand with an ideal set-up for efficient service.

The refreshment stand has become firmly established as an integral part of every progressive drive-in theatre operation not only because the provision of an attractive concession area where a variety of tasty snacks are available helps to further patron goodwill, but also because confection sales form a sizeable percentage of total revenue. As a matter of fact, refreshment receipts may well make up for admission losses on nights when attendance is down for one reason or another.

Due to its overwhelming importance in a successful drive-in venture, efficient refreshment stand operation has been a subject of intensive study within the industry. After a considerable bit of the same painstaking experimentation which has accompanied the development of every phase of modern drive-in theatre operation, two principal methods of concession stand vending have evolved and are currently in use in outdoor theatres today.

The first of these is the "station system," under which the customer is generally served all merchandise and money collected for his purchases at one point of sale; in most cases, at least some of the food is prepared at this same point. The second method, which will be discussed at length in a subsequent article in this volume, is the cafeteria system, under which the customer often serves himself various foodstuffs at different points along the counter and pays for his food at one central point, usually a cashier at the end of the line.

Just as there has been heated debate over the respective merits of various types of screens and projection lamps, so has there been considerable controversy over the question of which one of the above systems best fulfills the needs of efficient drive-in refreshment stand operation. No definite answer can be found to the problem because the question itself is a highly moot one. Since each system has its distinctive good points, the burden of responsibility rests upon the drive-in owner in selecting the one which appears to fit his particular requirements best.

However, the writer might venture to say that, as a general rule, the station system is better suited to smaller operations, while the cafeteria type may be used oftentimes to even greater advantage in larger theatres. Nevertheless, many exceptions may be found to the foregoing statement, so it by no means should be construed as a hard and fast rule. Again, it is up to the individual operator to decide which method appears to be most suitable for his own situation.

A TYPICAL STATION SYSTEM

In order to give the reader a complete understanding of the layout, function, and operating efficiencies to be sought in a profitable station system, a refreshment stand in a typical 500-car Mid-Western drive-in has been selected for discussion and analysis in this article.

While this particular stand combines all of the basic requirements for sound and profitable operation which must be incorporated into any concession area that purports to be successful, peculiarities and conditions of different localities will, of course, necessitate variations in detail in other stands. This single example does, however, contain the

Figure 1. A TYPICAL STATION OPERATION, that may be considered as double in most departments. From left to right are a combination sandwich unit complete with steamer and griddle, two hot dog steamers and roll warmers, a counter type deep fat fryer, and a large popcorn machine.

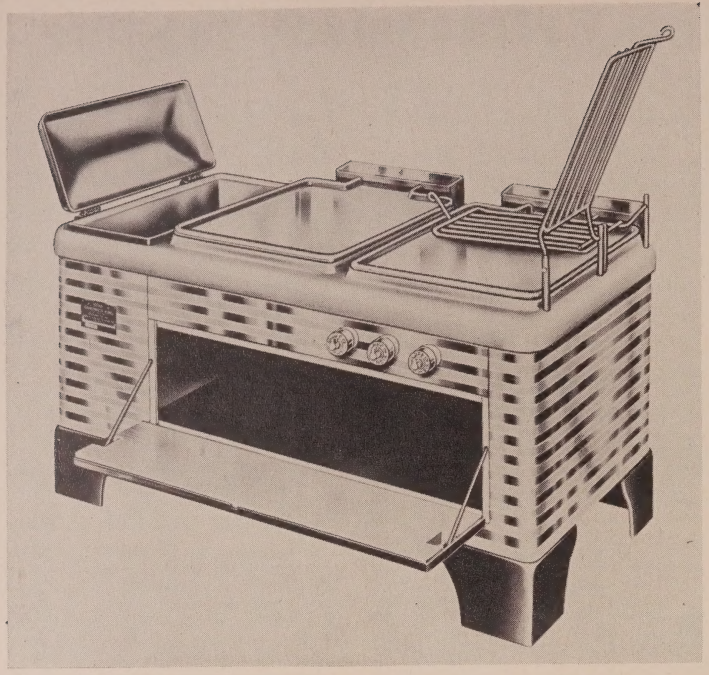


Figure 2. COMBINATION SANDWICH UNITS have a variety of adaptations to boiling, grilling, toasting, warming and cooking. The variety of applications permits wide patron choice in cooked-to-order meals.

essential fundamentals for any stand in any location.

Compact Arrangement

A glance at Fig. 1 will suffice to show that the stand depicted has a number of advantages. One of these is the fact that there is a minimum of custom-built equipment to hold the investment in line with the anticipated volume of business. The counter equipment used has been time-tested in mass feeding and is designed especially for heavy-duty, short-order work—the basis of concession operation. Furthermore, the overall arrangement is quite compact, so that the stand takes up relatively little space and requires few clerks to operate it efficiently. Thus, a small initial investment, low overhead, yet highest efficiency and profits, are possible.

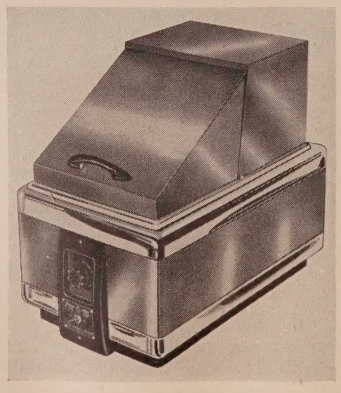
Display of Merchandise

In any type of "over the counter" selling—and concession operation is selling—the merchandising of products is of utmost importance. Everything possible must be done to increase the "per capita" sale. This particular installation is ideal for the display of merchandise, since the products are prepared, displayed, and served entirely in front of the customers, and in the personal contact between the clerks and the customers there is every opportunity to apply "the power of suggestion." Properly trained clerks may easily suggest different products or larger size packages to boost sales. People like to see prepared the food that they are about to buy and appreciate suggestions from a friendly clerk, so the drive-in operator should be sure to capitalize on these two prime points.

Selected Menu

If a drive-in refreshment stand is to be operated successfully and profitably, the menu must be limited to popular products that are naturally fast sellers in the locality, but yet this bill of fare must be diversified enough to appeal to the customers' ideas of what a snack should be. The operator of the stand in question follows this general precept by restricting his line of foodstuffs to those which he knows will meet the tastes of his patrons. Normally, it is not wise to consider short orders such as steaks, chops, and the like. It is far better to stay with long-profit items such as hot dogs, tamales, and similar products that may be popular in the particular territory under consideration.

Figure 3. ROLL WARMERS, in addition to their normal use, can be utilized to keep tasty a supply of advance-prepared sandwiches for rush hours.



Next to popcorn, the hot dog will probably be the largest seller with the greatest profit. It should, therefore, be given prominence by proclaiming its quality and tastiness; the build-up is bound to result in increased sales. From a volume standpoint, most operators prefer to feature the steamed "dog," which can be prepared 30 minutes in advance and served as required with a minimum of waste. If it is properly cared for, a steamed dog can even be refrigerated and served again the next day with all the original taste and succulence maintained.

In some areas, french fried foods, especially potatoes, are very popular as well as profitable and make a good concession item. Some operators have found other fried specialties, such as shrimp, perch or cat fish sandwiches, onion rings, etc., to be good money-makers. Care must be used here, however, to avoid involvement in troublesome short order problems.

Equipment

At the far left side of the subject stand, built into the counter and enclosed in glass, is a combination sandwich unit similar to the one shown in Fig. 2. This unit has two griddles for hamburgers, cube steaks, hot dogs, or any other general griddle work. It also has a steamer for steaming hot dogs and tamales, along with a general storage compartment containing a cutting board.

Directly behind this unit are storage cabinets for raw materials, and on the right is located a medium-size refrigerator large enough to handle the storage of meats, cream, etc. Storage space for rolls is situated directly above the refrigerator.

To the right of the refrigerator is a roll warmer for sandwiches prepared in advance similar to that shown in Fig. 3. Next to this is located a combination hot dog steamer and roll warmer (see Fig. 4) from which the customers are served. The combined capacity of the three units is more than enough to handle this station during peak rushes.

The next items on the back bar are the cash register, candy display, and menu. The hot coffee station is situated nearby on the right. In this installation, glass coffee makers are used on a two-burner hot plate, since there is no particularly large demand for coffee in this specific location.

Above the back bar are display shelves for merchandising popcorn or other products. Display racks are also used on the front and back counter for the display of potato chips and other bagged merchandise.

Drink boxes are built into the front counter for the cooling and serving of cold drinks. Only two or three varieties of drinks are handled and are served to customers in paper cups.

Behind the center post is another cash register for the use of the right-hand station, and next to it is another

roll warmer and combination hot dog steamer and bun warmer. The deep fat fryer (see Fig. 5), in which french fried potatoes are prepared, is located at the right. As a general rule, a counter model fryer is used in operations of this type, but there are a variety of floor models available on the market also.

The right half of this two-station stand (one station will normally handle about 250 cars) is similar to the left side with the displays above the back bar and the drink cabinets built into the front counter.

The popcorn production unit is situated at the extreme right of the stand. A larger commercial two-pound popper (see Fig. 6), mounted in the top of the stand to allow full working room under the unit, has been used in this installation; the entire section has been enclosed in glass. The corn pan is heated with a perforated section for screening the duds from the popped corn. Such an arrangement takes up little space, yet permits maximum popping capacity with ample working room and facilities for handling a large volume of popcorn. All packaging is done in this location and distributed to the two stations for serving to the customers.

Cigarettes are handled in a vending machine outside the stand. This is a short-profit item, and by using such a machine absolute control is maintained over the stock with the customer serving himself. A reasonable profit can be made in this way with very little attention and no overhead.

Condiment stations are located on the three posts at the front of the stand. The general flow of traffic is not interrupted, and yet there is capacity enough to handle all the customers. Waste receptacles are also located at these same positions.

CONCLUSION

It is obvious from the foregoing discussion of a typical refreshment stand operated under a station system that a compact overall layout and a practical equipment installation scheme are absolutely essential. If a concession area is to be run successfully by this method. In view of the fact that each attendant is called upon to handle several varieties of foodstuffs, merchandise should be readily accessible to each individual station, so that employees are not compelled to waste precious time running from one end of the stand to the other to fill orders.

For example, as seen in the stand described, hot dog steamers and coffee brewers should be within easy reach of each station attendant so that he may serve these commodities in as rapid a fashion as possible. Nevertheless, while maximum compactness should be sought in any refreshment stand plan, ample working room must be allowed, lest personnel efficiency be hampered by crowded quarters.

Equally, if not more, important in the successful operation of a station system type of refreshment stand is the staff. Since this kind of vending is primarily based on individual service with a far-reaching degree of responsibility bestowed on each attendant, the importance of the human element can never be discounted under any circumstances.

Inasmuch as every employee must, in the majority of cases, perform the multiple tasks of food preparation, service, and collection of funds, it is imperative that he be highly skilled and completely trustworthy. In addition, he must be endowed with a pleasant personality and the ability to handle customers tactfully and fairly in seeing to it that each is served in his proper turn in line.

Pride in one's personal appearance and surroundings is still another characteristic which management must insist upon in every applicant for a refreshment stand job. Unless its personnel possess qualities such as those outlined above, the operating efficiency of the stand will be seriously impaired.

Once he has hired first-class help, the drive-in operator must see to it that they are properly trained in the fine arts of preparing, serving, and selling food. In other words, particularly in the case of a station system type of operation, a refreshment stand can only be as lucrative as its employees are competent. Failure on the part of management to hire high-type personnel and train them properly may well spell the difference between profit and loss.

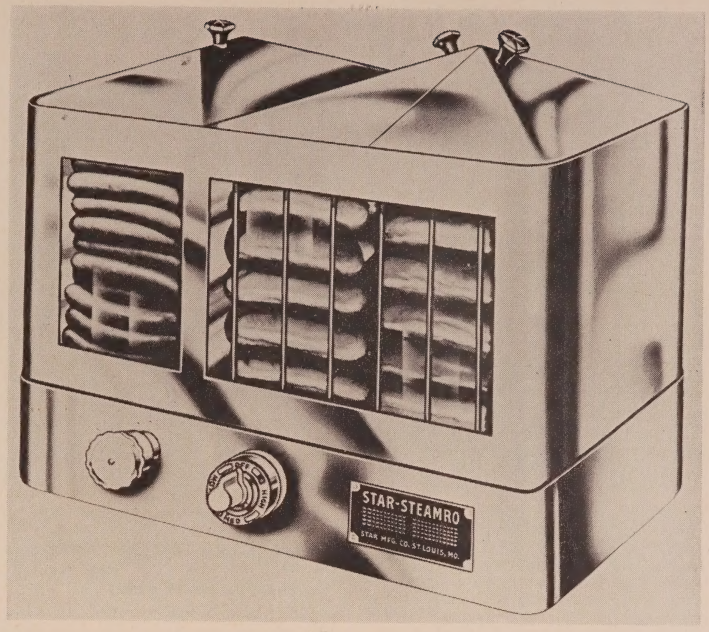


Figure 4. A COMBINATION HOT DOG STEAMER and bun warmer stores a large supply of both for rapid customer service at peak hours.

Figure 5. A DEEP-FAT FRYER can be of the counter type shown here and can deliver a large supply of the always profitable "french-fries."

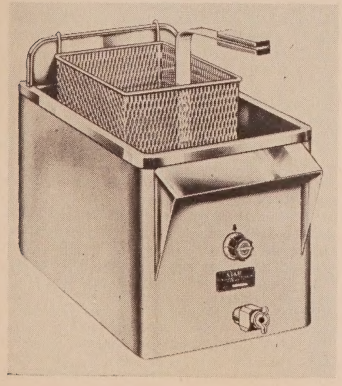
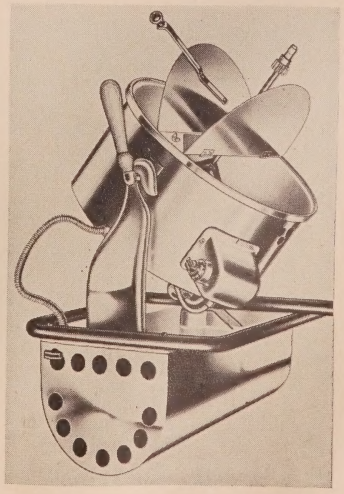


Figure 6. A TWO-POUND COMMERCIAL POPPER insures top popping capacity for even a large drive-in. It can be built into the counter unit.



Cafeteria Systems for Drive-Ins

Notable Speed-Up in Refreshment Sales Effected With Less Help Required and Better Cash Control

By Philip L. Lowe
Theatre Candy Company, Inc.

Every drive-in operator knows and appreciates the far-reaching importance of concession stand sales as an indispensable adjunct to receipts at the boxoffice. As a matter of fact, refreshment sales have come to loom so large in the outdoor theatre profit picture that effective food merchandising methods are receiving as much concentrated study as insect control, better projection, traffic handling, and the many other problems which arise in connection with drive-in operation.

In recent months, considerable interest has been exhibited by the industry in the adaptation of a cafeteria type of vending system to drive-in food service as a replacement for the traditional station system type of operation. The former type, long in use in restaurants, operates on a more or less self-service basis and might well be said to apply to the purchase of food the same general principles of individual selection and central collection of funds on which modern super markets operate. Under the station system type, of course, just as at the corner grocery store, the customer is served at an individual counter by a clerk who procures the desired goods and often collects the money directly at the point of sale.

For a number of reasons which will be discussed in this article, the popularity of the cafeteria type of system is growing by leaps and bounds. For example, it is reasonable to estimate that 95% of the new drive-ins built during 1950 in the New England area had cafeteria type refreshment stands, and throughout the rest of the nation many other top-flight operators are converting their old type refreshment stands to the cafeteria type. In the process there has been a major swing away from economy of space and equipment, for theatre operators are finding that to economize by building a small refreshment stand with a minimum of equipment is the poorest of frugality.

SPECIAL ADVANTAGES

Larger Volume of Sales

A cafeteria system will give the drive-in operator greater sales because it allows him to do more gross business in a shorter selling time with its quick self-service type of operation. This is an absolute necessity in an outdoor theatre which runs two features with an intermission between them, or in any single-feature one which has a break at any time during the show when the majority of patrons leave their cars and come to the concession area to purchase refreshments.

Under a cafeteria system more purchases per person may be chalked up because all the items on sale are presented to the view of the public, and no person can go through the cafeteria line to buy what he originally had in mind on his way to the stand without being exposed visually and physically to all the other items which are offered for sale. There is definite proof that when people are so exposed to a wide variety of items, they will inevitably pick some of them up. The same open displays and mass merchandising techniques which the Woolworth Company uses so successfully are equally effective in a cafeteria system in attracting customer interest and increasing sales.

Less Skilled Help

Under a station system type of refreshment operation, each attendant is a food preparer, server, and money-taker. Only skilled help are able to perform all three tasks quickly.

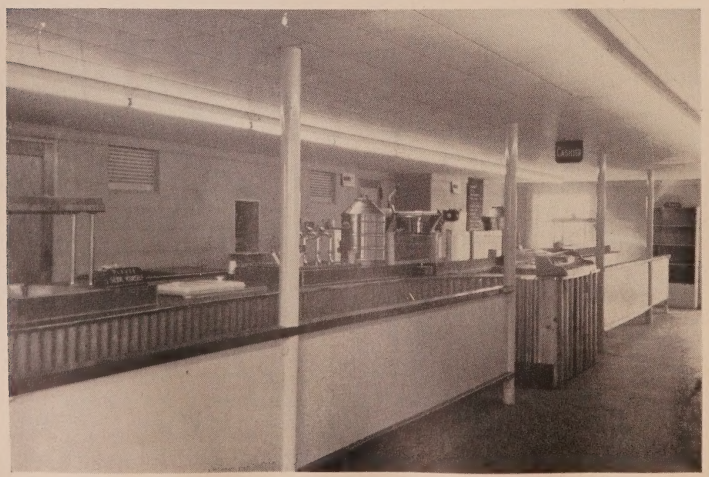
In a cafeteria system, however, trained food preparers are needed to fix the food, but the food servers need not be skilled personnel. They are merely helpers who bring the food from preparation areas to the display and selling points and assist the public in picking the food up. Although the cashiers must be skilled help also, all of the service, as pointed out above, can be done by untrained help, who may be easily used in other jobs around the theatre during "off" periods. Since the servers far outnumber

BRIEF: ***The preceding article has been devoted to one popular type of drive-in refreshment stand operation . . . station system vending . . . The following survey treats a relative newcomer to the outdoor theatre concession field . . . the cafeteria system . . . Each of these two systems has its respective merits . . . and it is the aim of the editors of THEATRE CATALOG to review them both . . . so that the drive-in operator may take his choice of the one which he feels best suits his purposes.***

The cafeteria system . . . like all innovations . . . has met with its due share of controversy . . . as shown by the heated debate which raged over it at both the 1950 TESMA and TOA conventions . . . In any event, the cafeteria system has made its presence felt . . . and has swept like wildfire across many sections of the nation . . . There are . . . of course . . . valid reasons behind its phenomenal upsurge in popularity . . . and the following article points up a good many of them.

Written by a prominent candy company executive . . . who has installed cafeteria systems in many of his own drive-in operations . . . this authoritative treatise covers such important matters as: special advantages . . . and other considerations . . . of the cafeteria system . . . choice selling items . . . and equipment needed.

THE WAREHAM DRIVE-IN of 550 cars serves a small town summer resort in Massachusetts and uses a cafeteria stand. Signs encourage its patrons to "Serve Yourself" and direct them to the "Cashier." Fried foods are prepared in the back room and are passed through an opening for storage in counter heaters. Racks of trays head each self-service line and are easily slid along the extra 6-inch lip of the 30-inch wide counter. This theatre serves popcorn, french fries, hot dogs and even pizza pies which are specially stored in a pizza oven. Service is quick and efficient with a minimum staff.



the food preparers and cashiers, appreciable savings in labor costs may be effected with a cafeteria system.

Better Cash Control

Under the station system, all of the personnel handle money and must be watched carefully for any attempts at pilferage, whereas in a cafeteria system only a few cashiers handle money. Since they are generally persons who are used to handling money and the responsibilities that go with it, supervision and checking are simple matters. Thus, absolute control over the money taken in is virtually assured.

Furthermore, a cafeteria system will stop a common source of leakage known as the "give-away." Since it is usually customary to hire local inhabitants for jobs in drive-in refreshment stands, the attendants behind the counter often know a large percentage of the customers. Under a station system, it is relatively easy for a money-taking attendant to undercharge a friend for a purchase, but under a cafeteria system, where the money is collected by a cashier at the end of the line, this practice is eliminated.

Preparation and Service Apart

A cafeteria system will work better and look better because it is possible to separate food preparation from service. Cleanliness can be enforced in areas where food preparation is done, and any untidiness can be hidden through layout, while the area where the customer is actually served and which he principally sees is always full of food that is tempting and appetizing. Any glance toward the rear of the area or elsewhere in the immediate vicinity will convey an impression of orderly cleanliness.

This distinct separation of food preparation and service aids operating efficiency also by enabling the customer to pick up exactly what he wants, travel down a steadily moving line, pay for his merchandise, and leave promptly. Obviously, people can serve themselves faster than they can be served, so the only limit to the operating speed of a cafeteria system lies in the equipment used and the rapidity with which the cashiers handle the money.

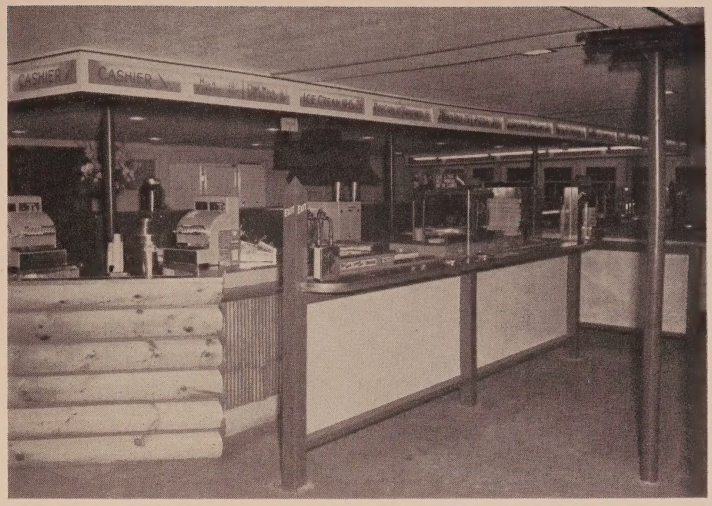
Customer Goodwill

There is nothing that enrages a customer more than being shoved around or having somebody else served out of turn and ahead of him at a counter. A cafeteria system eliminates such injustices because each customer is served quickly and efficiently at his place in line.

Savings on Spillage and Waste

It is a general policy at all well-operated refreshment stands that if a customer's food is accidentally spilled by a jostling neighbor immediately after its purchase, the management replaces it for him without additional charge. In a cafeteria system, there is little jostling or dropping of food, particularly if the proper type of tray is provided for carrying purchases.

Savings in food waste and overpreparation are also effected in a cafeteria system because the food preparation goes on at one point or at a limited number of points, as opposed to the several different points of preparation and service in a station system.



THE QUINTREE DRIVE-IN of 850 cars serves a metropolitan area around Braintree, Massachusetts. Foods and confections are served through a U-shaped 4-lane cafeteria, with each lane containing the hot foods, ice cream and drinks in that order. Direction signs are used liberally to encourage the patrons to "Help Yourself" and find the proper entrances and exits. This is one of the most successful confection stands on record, with both a large daily gross and a high per-person sales average. For example, fried clams which are popular in this area, sell for 50 cents per box and are a sales leader.

Equipment Failures Less Fatal

If a piece of equipment breaks down in a complete or split-station system, that station must be closed and customers redirected to others, thus causing a great deal of confusion, annoyance, and loss of business. Under a cafeteria system, since food preparation is centralized, stocks of previously prepared food can be diverted from one selling area to another without interrupting the flow of traffic.

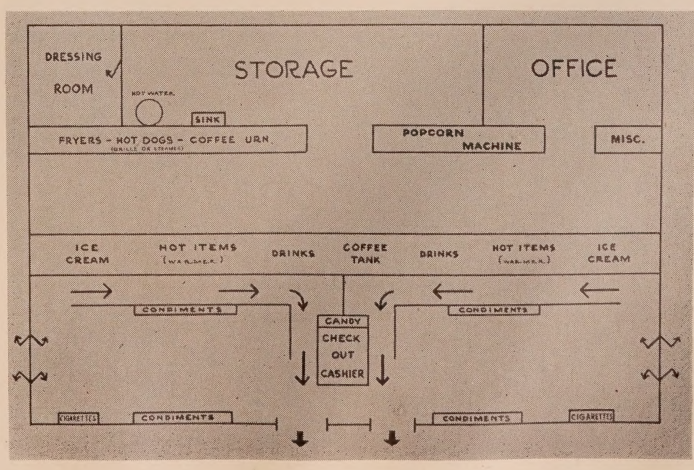
Even if the supply of an item where there has been an absolute failure of equipment runs out, a contingency which can also occur under a station system, its mere absence from the cafeteria counter will serve notice that it is no longer for sale, and there will be little need for embarrassing explanations of the situation.

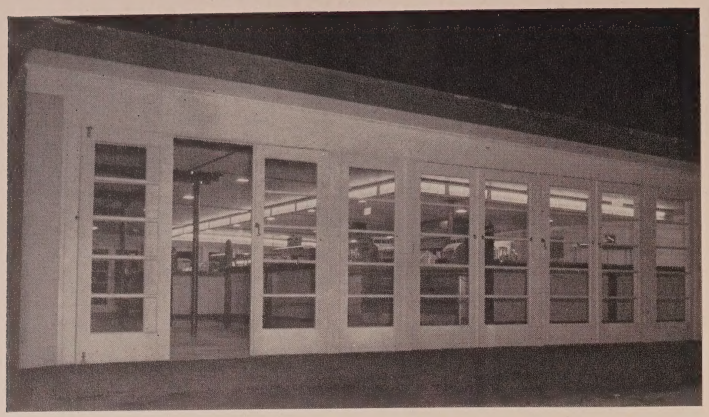
OTHER CONSIDERATIONS

Equipment Costs

Although a cafeteria system will not necessarily cost less to equip, the two

PLOT PLAN No. 1 indicates a typical 2-lane cafeteria plan. Note that all cooking and food processing takes place at the back bar, with only warmer and deep-freeze receptacles at the patron self-service bar. The office and dressing room are always helpful and seldom thought of. Supermarket style check-out counters permit candy displays at an advantageous point. Adaptable to smaller and medium sized theatres, the counter length of such stands would vary from 30 to 50 feet, but the arrangement of items on the counter would be fairly regular. Impulse purchasing is one of its prime advantages.





EXTERIOR OF THE QUINTREE DRIVE-IN cafeteria stand is modern and inviting with a wide use of clear glass doors. Situated at ramps number eight and nine it is handy to the service of all patrons of the 14 ramp theatre. The building itself is roughly 50 feet square and in addition to the refreshment facilities contains the manager's office, storage room, and men's and ladies' rooms with entirely separate entrances. All lighting in the refreshment areas is indirect, while strip lighting backs the sign sections. Here is both the equipment, the layout, and the architecture which might grace a main stem location.

alternatives have their perhaps more costly drawbacks. First of all, there is the complete-station set-up with a full set of equipment at each station. Thus, if there are six stations, six sets of equipment are required. This factor obviously makes a cafeteria system less expensive to equip.

Secondly, there is the single-station system, whereby sales are made and money collected for popcorn at one part of the counter, drinks at another part, candy at a third part, ice cream at a fourth, etc. Equipment costs are approximately the same as those for the cafeteria type, but the system itself is quite confusing, slow-operating, and does considerably less business.

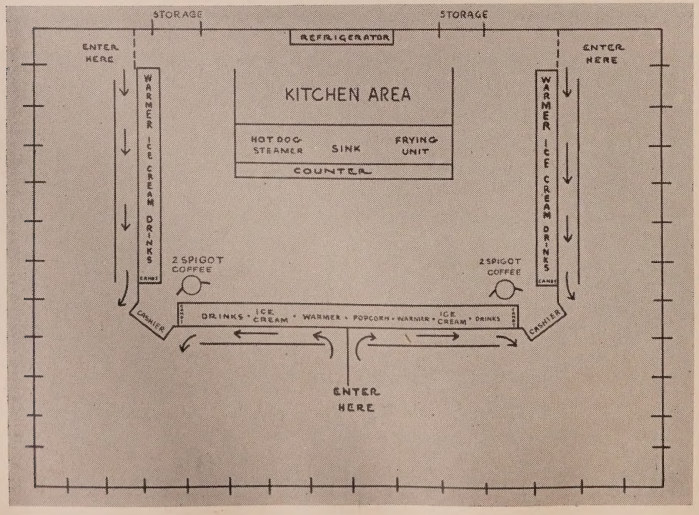
Finally, money control through cash registers can be effected far better under a cafeteria system than under either a complete or split-station set-up in which each attendant collects funds at the point of sale.

Payroll Expenses

As far as basic payroll (regular help) expenses are concerned, a cafeteria system may not necessarily cost less to operate, but it should be remembered, as pointed out previously, that it is possible to use a good many serving personnel who are unskilled and can be borrowed from other parts of the theatre.

The cashier, of course, must be a skilled person and paid standard rates. Likewise, the wages of food preparation help are approximately the same under any system. If the operator wants to staff his cafeteria with full-time personnel for peaks, he cannot save any money over any system. However, a properly operated cafeteria system has a skeleton payroll of regular workers who are skilled and uses unskilled employees from the rest of the theatre as servers.

PLOT PLAN No. 2 shows a typical 4-lane U-shaped cafeteria arrangement. Note that each service lane is a complete unit with spillable drinks continuing to be the last item to be placed on the patron's tray. The center island provides an efficient storage and working area, and the kitchen can be glassed in to protect patrons from the cooking odors and still impress them with its orderly cleanliness. Again emphasizing the separation of food preparation from food service, ample standee areas are provided outside of the cafeteria lanes with no effort made to regiment entrance to or exit from the building itself.



Space Requirements

It is important to realize that a cafeteria system will not necessarily occupy less space than a station system one. As a matter of fact, a cafeteria system properly laid out and properly executed should use more space to get its maximum effectiveness. However, oftentimes in small theatres it is possible to set up a much more efficient cafeteria system in the smaller spaces than could possibly be achieved with the station system. For example, a 30′ counter will suffice for a two-lane cafeteria that can serve almost as many people as a 50′ two-lane cafeteria. Of course, it is not possible to obtain as much flexibility and mobility for change to introduce new items.

It is extremely difficult to present innovations without adequate space and plenty of room behind the counter for the personnel to move in. Speed, efficiency, and good operation are the prime objectives to be sought always.

Drawing Power

While it is true that a good-looking, well-run refreshment stand which serves high quality products at a competitive price is definitely an asset to any theatre, it cannot seriously be stated that a prospective patron would consider theatre "X" over theatre "Y" because theatre "X" had a better refreshment stand. In the final analysis, the picture playing and the general operation of the theatre are the most important factors in bringing people to it.

However, once the patrons are in the theatre, there is an opportunity to do a large amount of refreshment business with them—roughly over 50% of the gross receipts. A well-operated refreshment stand will be particularly attractive to parents who are constantly badgered by children for food because they are anxious not only to see it tastefully presented, but also to watch it served in an efficient fashion so that they may return to their cars as soon as possible.

Importance of Good Management

Operating the refreshment area of a drive-in theatre is not like running the candy, popcorn, and ice cream stand in a roofed house; the latter is far simpler.

Skilled food service is an art which requires time, thought, and effort. If the drive-in operator is prepared as an individual to give his refreshment stand the attention it deserves in the light of its important role in the overall profit picture, then he can consider operating it himself. However, if he cannot give it the attention it merits, he should let someone experienced in food service operate the stand for him. Experienced food service managers with trained personnel who know all of the short cuts and have taken the trouble to train their help can quite often operate a refreshment stand far more efficiently than the drive-in owner could hope to operate it.

DETERMINATION OF SIZE

It is difficult to determine exactly what size cafeteria should be used in a particular drive-in, but here is a rule-of-thumb outline: 500 cars or less, two-lane cafeteria; 500 to 800 cars, two or four lanes optional; 700 to 800 cars, four lanes highly recommended; 800 to 1,200 cars, four lanes mandatory.

This guide can, of course, be qualified in certain cases. For example, a 250-car drive-in can operate a one-lane cafeteria very efficiently, but a properly designed and properly executed drive-in theatre refreshment stand can, using basic equipment, have a two-lane cafeteria for $300 more in equipment costs than a one-lane cafeteria with the same number of personnel. For that reason, the two-lane cafeteria is recommended for even the smallest of drive-ins.

There is one further point which should be brought out regarding the above table. There are a great many operators who have built a 500-car theatre and then wished they had a 1,000-car theatre, and vice-versa. There are some 1,000-car theatres which could handle the amount of business available to them with the 500-car plan. However, a theatre is built for a certain number of cars with the expectation of doing a definite volume of business. By the same token, the refreshment area should be designed to harmonize with the theatre's anticipated patronage.

A notable advantage of a four-lane cafeteria, designed for a 1,000-car drive-in, lies in the fact that on those days where there are only two, three, or four hundred cars in the theatre, only two lanes need be operated. Thus, it is important to design a refreshment stand layout in such a way that either two or four lanes can be operated; by doing so, payroll costs may be reduced considerably, and efficiency can be maintained, even with less than peak loads in the theatre.

CHOICE SELLING ITEMS

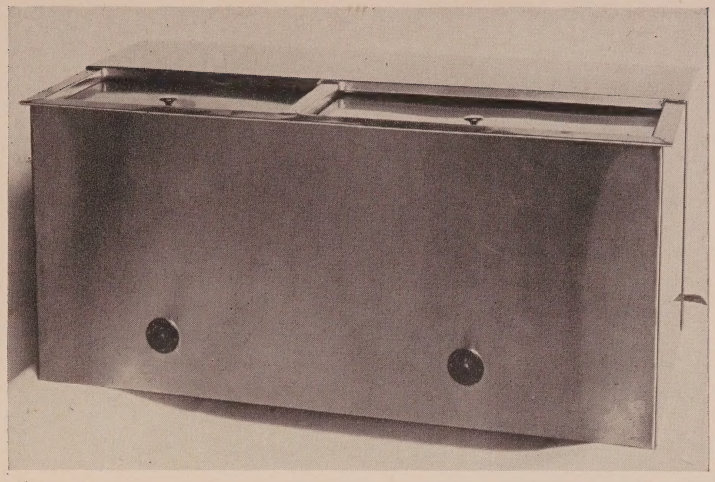
A cafeteria system lends itself nicely to the sale of almost any item. It has a particular advantage in that it allows the merchandiser to centralize his wares in each different lane with both hot and cold areas. It is difficult to state on a national basis what should be sold in drive-ins. There are certain items that all the drive-ins will sell, while there are some which may only sell well in certain localities.

Soft Drinks and Coffee

Generally speaking, soft drinks and coffee are the largest sellers in drive-in theatres. Since they account for the largest percentage of gross business, they should be placed last in a cafeteria line, immediately before the check-out or cashier's booth. This is also the most desirable location because they will be carried a shorter distance through the line with less spilling and because the drinks will have less time to get hot if they are cold, and cold if they are hot.

The argument has waxed hot and heavy as to whether multiple drinks or just a single drink should be offered. It can generally be said that each area of the country has its own favorite drink. Some areas prefer a particular carbonated drink, some a non-carbonated drink, while others like orange, lemon, coca-cola, root beer, etc.

It is the feeling of the writer, after surveying several operating areas, that where multiple drinks are offered, let us say the first three best-selling drinks, the gross business done in soft drinks is increased approximately 20% over the amount of business done on single drinks. This revelation is highly important, since, if the proper type of drink equipment is used as opposed to selling out of bottles, pre-packed cans, cartons, or containers, drinks will yield the highest margin of profit of any item sold in the theatre. Thus, increasing this part of his revenue is probably the most important thing a refreshment stand operator can do.



A SUPER STEAMER of gleaming stainless steel is capable of steaming 400 hot dogs and warming 300 rolls at one time. It has individual thermostatic controls for each item and earns a high speed rating.

Popcorn

Drive-in theatres were made to order for the commercial type popper. There are a few cases in the smaller theatre where the conventional type can handle the load of customers for popcorn, but a commercial popper assures the owner of the theatre that all of his requirements can be met at any time, regardless of whether the commercial popper is built into the front display of the counter, set into the back bar, or even in cases where the popcorn is prepared in the back room and sold through warmers. In short, the commercial popper is a "must" for popcorn, and popcorn is a "must" for the theatre.

Under a cafeteria system, popcorn must be packaged in advance and placed on the counter, or packaged as the line moves along the counter and placed there for the public to pick it up. This operation requires a special type of warming equipment, the more open the better. Since popcorn is the greatest of all "impulse" items in the theatre, everything possible should be done to encourage this high-type profit item.

Ice Cream

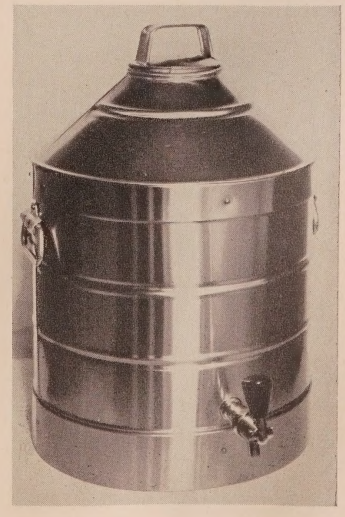
Ice cream is a definite "must" also under any type of refreshment stand system. In a cafeteria system, the ice cream cabinet is set directly into the counter, flush with the top. During rush periods the top is removed, and at slack times a plastic cover may be used through which the customer is invited to serve himself by a sign painted on the top reading, "Open me and serve yourself."

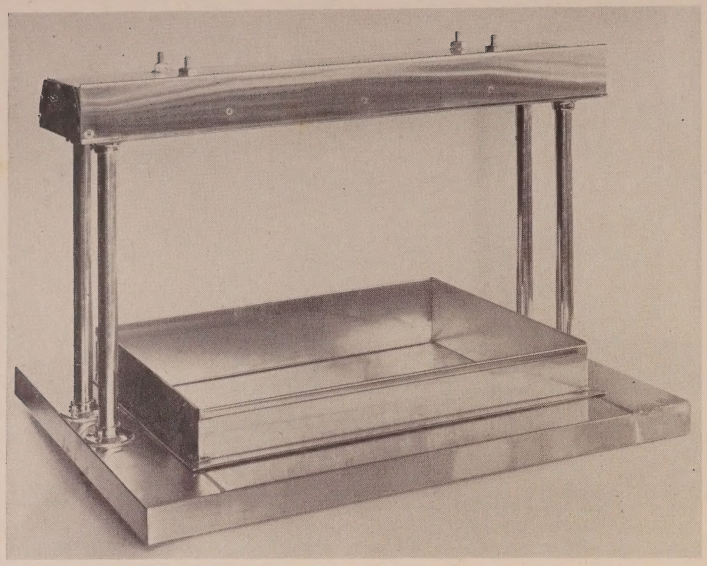
Two, three, or four different types of packaged ice creams should be used. The nature of a locality, profit potential, and public acceptance are among the factors influencing the sale of ice cream. The fact that patrons handle the ice cream themselves and make their own selections directly from the counter is an asset.

Candy

The general procedure under a cafeteria system is to sell candy (which is a low-profit item as regards drive-in thea-

A COFFEEBOY can keep hot as much as 10 gallons of coffee for a period of 18 hours. They are obtainable in single or double spigot service.



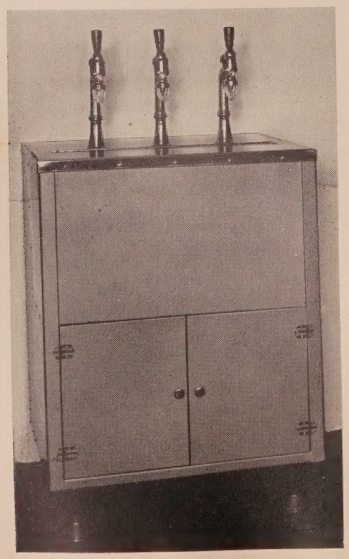


A COUNTER WARMER for the storage of prepared popcorn, hot dogs or fried foods is available in sizes from 30 to 90 inches and can generate and hold a heat of 150 degrees in as short as 15 seconds.

tres and, during the hot months, a small selling item compared to others) by means of machines or at the check-out counter in much the same way a super-market sells it. The cashier may be used to sell the candy or keep an eye on it as the customers come down to pay their way out, if it is on the counter.

In view of rising candy prices, drive-in operators who have machines may shortly find it difficult to maintain profit volume. If candy goes to 12c and 6c, as it seems well on the way to doing, candy machines may well have to be put in the back room and candy sold at the check-out counter. In any case, the writer has always advised selling at the check-out counter to save valuable money for candy machines which are not deemed necessary. A decent display at the check-out counter costs about $20 to construct, whereas a good candy machine costs approximately $200.

3-FLAVOR DRINK UNITS with a large capacity for carbonated and non-carbonated drinks are available with both ice and mechanical cooling.



Cigarettes

Cigarettes are the most highly pilfered item that can be sold in any location. Many refreshment stand attendants are strongly tempted to take packages of cigarettes for their own use. Therefore, it is strongly recommended that cigarettes be sold exclusively through machines and almost completely on a concession basis, whereby the concessionaire pays the theatre operator a percentage of his income. Cigarettes will never be a high-profit item; as a matter of fact, they are always an "annoyance" item. If more than the "going" price is charged, patrons think there is profiteering on other items. It is best to take a small profit and get rid of the headaches.

Hot Dogs

Virtually every drive-in theatre sells hot dogs. The method of preparation (steaming or grilling) is a matter which depends on the particular area in which they are sold. People in some parts of the country won't buy anything but the steamed type, while others won't buy anything but the grilled, and some will buy either. However, more dogs and rolls can be prepared by steaming than by grilling, and there is generally less loss through the former method. Whichever side of this controversial question the drive-in operator takes, he should make sure that the equipment used is large enough to accommodate demand.

Under the cafeteria system, either the hot dog holding unit is set into the counter, and the patron takes his hot dog, which has been placed in a roll and napkin (or a roll in a paper "boat"), directly from the serving unit, or the steamer itself is placed directly into the counter with service made from that point by assistance from the food preparer. The writer prefers the former system to the latter because of a firm belief that food preparation, wherever possible, should be divorced from food service. Of course, food preparation should not be completely hidden from the customers, lest they get the mistaken impression that hot dogs made the day before are being sold. This can be effected by continual small transfers from the preparation point to the serving point by the unskilled personnel along the serving line.

Fried Foods and Hamburgers

Under the cafeteria style system, fried foods can be prepared in advance and held in warming units which have been designed for that purpose. An adequate period of time should be allowed to prepare a sufficient quantity of fried foods in advance of the peak periods to satisfy patron requirements. Fried foods, including french fried potatoes, onion rings, fried clams, and fried chicken, are highly profitable and should definitely be given consideration in achieving maximum gross. It has been the writer's experience that where fried foods have been introduced, and can be sold sufficiently in volume, they raise the overall percentage of sales in a drive-in by 10% of the total.

At the risk of incurring some adverse comment and possibly the disfavor of the beef industry, the writer ventures to say that, in his opinion, hamburgers should only be sold by those who are the most skilled of restaurant people. They are one product which is very liable to spoilage, if not properly refrigerated, and can cause a lot of trouble, if not sold fresh daily. Furthermore, the correct preparation of hamburgers involves making them to order, but selling hamburgers to order during the peak periods of drive-in refreshment stand operation is highly impractical; the best that can be hoped for is a 25-30% customer satisfaction.

Finally, hamburgers are not necessarily a high-profit item, and the cafeteria system offers no advantage in their sale.

If a drive-in operator wants to sell hamburgers in a cafeteria system, he should divorce his hamburger preparations and sale completely from his cafeteria lanes by means of a special white kitchen attached to the general area (see diagram and layouts for this type of operation).

Other Items

Other items which lend themselves nicely to preparation and sale under the cafeteria system are pizza, tamales, fruit juices, snow cones, etc. Each part of the country has its own sectional favorite.

As a general rule, a cafeteria system lends itself to the introduction of new items better with less confusion and more profit than any other type. A station system, whether it be complete

or split, is limited in the number of items that any one human being can efficiently collect, serve, and handle, but a cafeteria system has no such limitations.

Equipment

A cafeteria system requires larger capacity preparation, special display, and self-service equipment. It is important to emphasize here that no system which lacks the proper type of equipment can hope to operate in such a way as to produce a satisfactory profit volume. A review of the various kinds of equipment needed for the preparation and sale of the most popular merchandise is, therefore, in order.

Hot Food Service Section

This section is generally used for the service of hot sandwiches, popcorn, peanuts, french fries, fried chicken, clams, onion rings, shrimp, pizza, tamales, and similar foods. The problem, of course, is to provide means of displaying the foods in a sanitary manner within easy reach of all customers and proper heating facilities so that the food is kept hot and delightfully fresh.

There are two general ways to accomplish the above goal. First of all, a battery of thermostatically controlled hot food servers may be used to take care of the various products. All foods should be kept on racks away from the bottom and sides of the deep pan to prevent over-heating and drying out. One big advantage of this method lies in the fact that each individual section can be kept at the proper storage temperature for various types of foods. Units built into a serving counter side by side offer an excellent arrangement.

The second means lies in the use of special heating elements installed just above the serving area. Fixtures of proper length are available for any service area. Stainless steel trays of the proper size are placed on the counter under the elements, and enough heat will be furnished from these to do an excellent hot storage job under all conditions.

Foods may also be displayed and heated effectively by the use of special custom-built warming equipment which circulates hot air through perforated trays and stainless steel wire baskets in which the sandwiches or other foods are kept. This method has been used quite successfully, but for most general installations the cost is higher, and there is the problem of obtaining the correct amount of heat for various types of foods.

Ice Cream Cabinets

There are quite a number of self-service display refrigeration units on the market. Most of these can be incorporated into a serving counter to handle frozen ice cream products.

The main problem is the selection of equipment that will maintain the proper low temperatures, but yet possess excellent self-service merchandising features. The model selected should feature open display of the merchandise at the top of the cabinet, so that the customer encounters no difficulty in picking out just the products that he wants. A unit should be selected that will provide storage facilities under the display racks for reserve stock and have covers so that the unit can be closed up during "off" hours. This type of unit will reduce operating costs as well as give protection to the stock. Standard ice cream chests can be easily and inexpensively converted to achieve the above results.

Hot Drink Service

Dispensing equipment only, not preparation equipment, should be used in the service counter. This should be placed adjacent to the cold drink dispensing units, so that one operator can dispense both hot and cold drinks.

The prime purpose is to establish a simple method for dispensing the hot drinks and replenishing the supply as needed. One method is the use of a stainless steel urn-type, insulated, portable container with one or two spigots. This unit can be set up at the point of service and, when empty, be easily removed and replaced by a second full container.

A second method lies in the use of glass coffee containers kept on either an electric or gas hot plate. The disadvantages of this arrangement are possible glass breakage, slower handling, and limitation on serving capacity.

In serving a hot drink such as coffee, the sugar and cream present a serious question as to whether they should be served at the coffee station or the condiment counter. In this connection, there also arises the problem of whether coffee should be served with the cream already mixed. Each drive-in operator can, of course, find the answer by trial and error methods, but, on the whole, most outdoor theatre patrons appear to prefer coffee with cream.

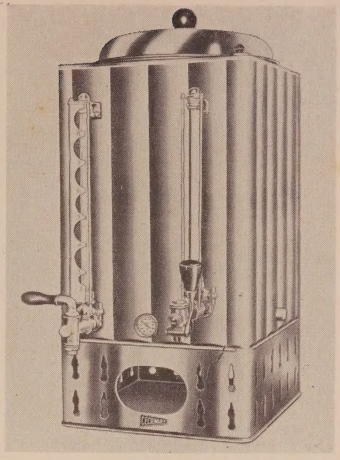
Cold Drink Service

The handling of cold drinks can become quite a problem if the variety of drinks offered is too broad or if the dispensing set-up is not properly arranged. The serving of drinks in bottles is not suitable for fast, efficient service. The problems of icing, serving, and collecting bottles can be eliminated entirely by the use of proper dispensing equipment.

Most operators have found that it is best to limit their variety of cold carbonated and non-carbonated drinks to not more than three, and these may be most simply dispensed from a syrup-type dispenser with three compartments or spigots for the different kinds. By serving the drinks in paper cups at one station, one attendant can easily handle a large number of people with no delay.

There are several manufacturers specializing in this particular type of dispensing equipment. There have been arguments *pro* and *con* as far as the advantages of one over another are concerned, but, in general, the compact, carbonated-type unit with three spigots is most desirable.

For those operators who wish to serve fresh fruit drinks, there are various types of juice pumps available that can be incorporated into the serving counter. Again, it should be emphasized, however, that most operators have found it more profitable to restrict the number of different types of drinks that they handle.



COFFEE URNS must be both serviceable and attractive to the eye. Stainless steel is to be desired because of its cleaning facilities.

Condiments

It is of extreme importance to place condiment stations so that they will not interfere with the flow of traffic through the cafeteria lanes. A sufficient number of stations should be set up so that no bottleneck is created. Such stations may consist of fairly narrow counters placed outside of the lane area, but inside of the refreshment stand. Into these counters should be built stainless steel or glass containers. There are various types of containers on the market that are satisfactory, but it is particularly recommended that they be built-in to prevent spillage from knocking over.

Thought should be given in the construction of condiment stations to the cleanliness aspect, for, as a general rule, they are somewhat difficult to keep clean and tidy.

Production and Kitchen Area

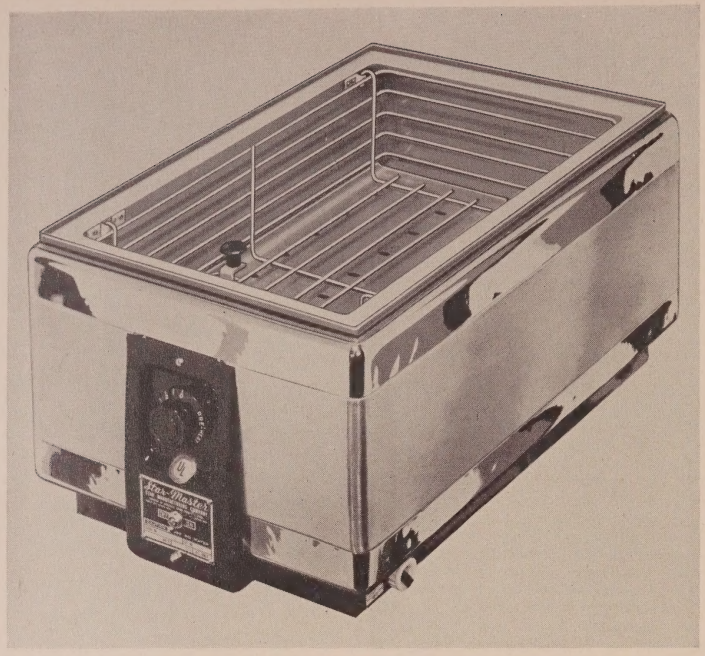
The equipment needed in this section will depend entirely on the products that the drive-in operator plans to handle. There are a few basic requirements, but the theatre owner should know definitely what products he is going to handle before attempting to lay out or buy equipment for this area.

Good refrigeration facilities are, of course, one basic need. It is not advisable to attempt to recommend or suggest any particular type of refrigeration equipment, for each operator should select the type that fits into his set-up best. It should be stressed, however, that ample refrigeration storage space must be provided.

Other prime necessities are hot water heaters and a sink, for these will be needed for cleaning purposes, if nothing else. They usually can be located in a back room or storage area, so that they will not be visible to the public.

Hot Dog Preparation

As stated previously, there are two general methods of preparing hot dogs—grilling and steaming with different types of equipment required for each



THE STAR ROLL WARMER has size limitations but is one of the most widely used pieces of drive-in theatre food dispensing equipment. Easily accessible controls permit a variety of heat levels.

method. Regardless of which method he chooses, the drive-in operator should select equipment that will do the best job for him based on the capacity required.

There are any number of large-capacity grills, either electric or gas-operated, on the market today. In this connection, it is suggested that the griddle chosen be as compact and neat-appearing as possible, occupying no more space than is actually required for the operation. It should be thermostatically controlled to insure the utmost in efficiency and trouble-free operation.

Hot dog steamers are readily available, although there are not too many manufacturers of exceptionally large-capacity steamers. In the past, most of this equipment has been custom-built to fill the purchaser's requirements. The prime factors in the construction of such steamers should be the use of corrosion-resistant materials, and a design that lends itself to easy cleaning. It is of the utmost importance that the hot dog steamer be cleaned regularly, for the combination of moisture and the acids produced from heated hot dogs have a tendency to produce a mold. Hot dogs should be kept well refrigerated and prepared only as needed.

A fairly large operation should require a steamer capacity of at least 400 hot dogs and 300 to 400 buns. These steamers should be thermostatically controlled, and the bun section should have good humidity control to prevent the buns from becoming soggy or drying out.

Coffee-Making Equipment

Coffee-making equipment is readily obtainable in almost any capacity desired. The problem here to select equipment that is easy to use and that will produce a consistently good quality product, for coffee must be good to draw repeat customers.

In general, there are two types of coffee-making equipment—the urn type and the automatic brewing type. The type selected must tie in closely with the dispensing area that is set up at the service counter. In many installations, the urn type is preferred because it is more convenient to handle in connection with thermos dispensing units. The automatic maker, however, has its advantages too in its efficiency of operation.

Popcorn Machines

Popcorn will invariably be a large-volume, high-profit item. Therefore, careful planning should be used to secure the correct equipment and to locate it properly in the refreshment stand.

It is recommended that a large capacity gas or electric popping unit be custom-built into the operation area, keeping in mind that the best merchandising of popcorn is the sight of it popping and its aroma. It is a relatively simple matter to construct a popping stand with features that make large-volume boxing or packaging of corn favorable when no thought has to be given to customer service from the stand. Arrangements should be made for the screening of corn and for raw supply storage. In view of the various features that can be built into such a set-up, it is possible to streamline an operation to get the highest-quality popping corn by the fastest and most efficient method.

Deep Fat Fryers

Most of the newest installations have incorporated deep fat fryers as part of their equipment, for it has been found that deep fried foods handled on a concession basis can greatly help to increase volume and profits.

The frying capacity required will depend entirely on the kind of fried products that the operator plans to handle. In view of this factor, it is especially hard to make specific recommendations. There are several excellent types of deep fat fryers on the market, both counter and floor models with electric or gas heat. Fat capacities range from 15 pounds on up.

Generally speaking, fryers of approximately 25-pound capacity would be best for the average location. If this is not sufficient, it is well to consider installing two or more of the 25-pound fryers, rather than extremely large units. Such an arrangement will yield more flexibility because different products may be cooked at the same time, and it is possible to operate just the capacity required, rather than one exceptionally large unit at all times.

Miscellaneous

Miscellaneous additional equipment may be required for various types of products. For example, if a reasonably large business is done on french fried potatoes, a small capacity potato peeler and slicer would prove economical. These items not only save labor, but also help to give a uniform, high-quality product.

Operators in certain areas have found a profitable market for pizza. If this is served, a small compact oven for baking is needed. Such commercial ovens are readily available for either electric or gas operation.

Other pieces of equipment may well be considered for additional types of merchandise. The necessity for such pieces depends entirely, of course, on the products that are selected for sale.

CONCLUSION

The management of an efficient refreshment area, whether a cafeteria, complete-station, or split-station system, is highly dependent upon the use of figures which are available to the operator. The figures, if they are correct, do not lie. Food control and cost control should be learned, studied, and, above all, applied.

The efficient refreshment stand operator finds out his costs and margins of profit and then uses them to advantage. If he is not getting the gross business he should, he needs some improvement in sales techniques, the quality of food, rapidity of service, equipment, etc. Even after gross sales have been determined, the net must be figured to calculate with greater certainty whether or not maximum profits are being made.

If the final figures are not satisfactory, steps should be taken to uncover deficiencies. Under the cafeteria system, the amounts of "give-away" and pilferage have been cut down and the responsibility for the handling of money centralized. Therefore, the operating figures should be truer than they could possibly be under any type of station system.

Recreation Areas in Outdoor Theatres

Simple Playgrounds and Miniature Amusement Parks Are Studied in Regard to Equipment and Operation

BRIEF: *The drive-in theatre itself is young in the annals of show business . . . and it must look to the youth of the nation for much of its patronage . . . Adult attendance . . . of course . . . looms as an important factor in the financial success of an outdoor theatre . . . but it is the children who often decide whether the family will go to the drive-in or elsewhere.*

If the kids are to urge their parents to take them out to the drive-in . . . the exhibitor must provide facilities for their amusement other than just the movie on the screen . . . Recreation areas . . . which may include simple playground apparatus, mechanized rides, or both . . . seem to be the ideal answer to the problem of keeping youngsters occupied . . . while their elders relax in peace to watch the show.

Described below are two common types of amusement facilities with respect to: location . . . equipment . . . supervision . . . and operating policies.

The success of any drive-in theatre depends, in the final analysis, on its ability to attract and retain family patronage. In order to accomplish this end and achieve the prosperity which comes with it, the outdoor theatre must have something definite to offer people of all ages, above and beyond the show on the screen.

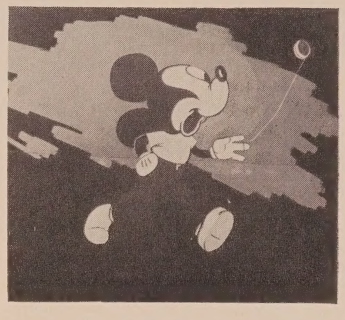
One of the greatest benefits which the drive-in alone can extend to parents is saving them the expense and/or trouble of obtaining a baby sitter to watch their offspring at home when they go out for the evening. Youngsters of any age can be conveniently brought along to a drive-in show, and whatever restlessness they do exhibit will still cause their elders half the discomfiture in the privacy of the family car that they would suffer at a roofed theatre. This one distinctive drive-in advantage is perhaps responsible for more adult patronage than any other single factor.

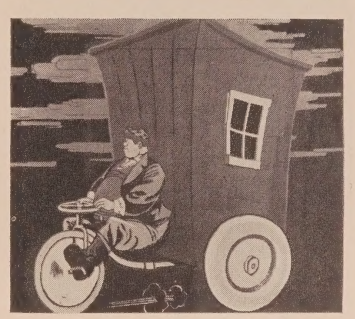
Shrewd drive-in operators have come to realize, however, that this process can, and should, work in reverse. In other words, powerful inducements should be offered to attract children to the drive-in as well as their parents, particularly so because the younger generation exercises a strong influence on the allocation of the family entertainment dollar.

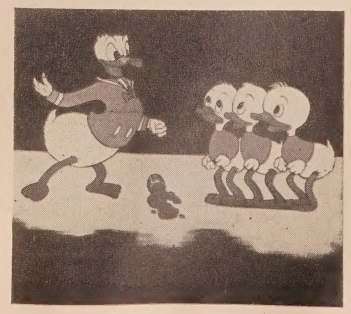
In view of the fact that most children are happier and less troublesome to their parents when they have some object of diversion, a properly equipped recreation area is probably the biggest drawing card a drive-in operator can offer to juvenile patrons. Parents will be quite prone to take their offspring to theatres with such facilities because the children may be sufficiently diverted to enable the former to enjoy most of the show in relaxed comfort. Many elders will come early to let the children play before dusk falls, so that they will be tired enough to rest peacefully during the show. Of course, children may continue to play throughout the performance as well, if good lighting and supervision have been provided in the recreation area.

SIMPLE PLAYGROUND AREAS

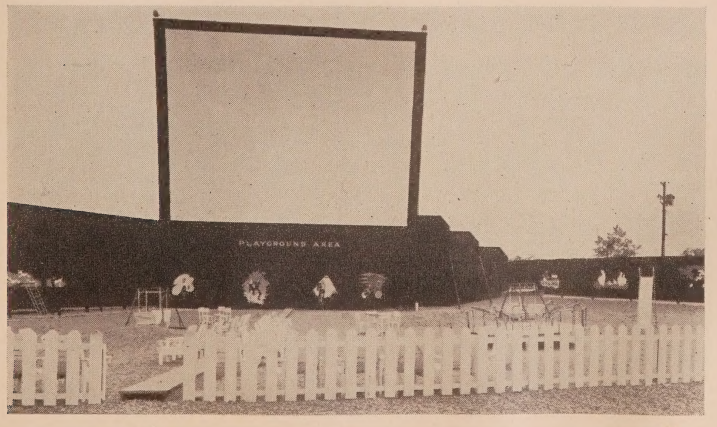
A survey of the amusement facilities in many drive-ins shows that there are two kinds of recreation areas presently

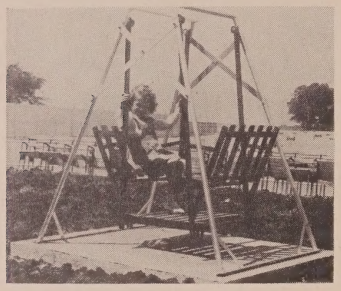


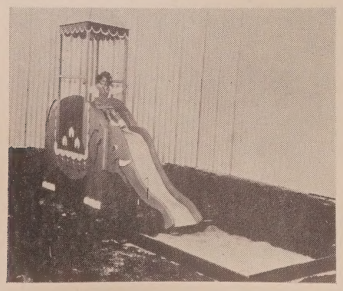




FAMILIAR CARTOON CHARACTERS ON SURROUNDING WALLS delight young patrons who visit the de luxe playground at the Brandywine Drive-In, Wilmington, Del. A slide, swing, and whirl all offer many hours of fun for "small fry," and their elders may relax in comfortable chairs furnished.







in operation. One type (discussed in this section) restricts itself to simple and familiar playground equipment, while the other (treated later on) centers mainly around mechanized "rides," somewhat similar to those found in amusement parks. Of course, there are quite a few theatres which have a combination of both, but each will be treated separately here.

Location

The normal simple playground area is generally situated within the theatre proper beyond the point of admission, so that its use may be restricted to actual patrons. A site adequate in size must be carefully chosen in relation to the rest of theatre to avoid, insofar as possible, the usual hazards of drive-in operation. It is advisable to put up fencing or close hedging to prevent occupants from darting out into traffic; naturally, every parent wants to rest assured that his child is playing in safe surroundings.

Playgrounds in a number of drive-ins are situated directly in front of the screen, and chairs are provided for parents who want to keep an eye on their charges while they see the show. On the whole, the noise of children playing in this location during a performance does not reach the in-car speakers, but a little sound acoustical planning in the beginning will eliminate any possibility of this distraction.

If desired, the playground may be set up near or outside the entrance to enable its use by "small fry" in the community during daytime hours. Although considerable goodwill may be gained in this manner, every precaution must be taken to see to it that no ill feeling is created when the area is closed to non-patrons in the evening.

Equipment

Just as it is unwise for him to purchase poor projection and sound equipment, so is it foolish for the outdoor exhibitor to invest in playground equipment of an inferior quality. In the first place drive-in playground equipment must be sturdy enough to withstand a lot of hard wear and abuse; the type of recreational apparatus found in the average home backyard simply will not stand up in an outdoor theatre.

Secondly, drive-in playground equipment must offer some diversity, for experience has shown that children weary rapidly of the same thing. This problem may be met by providing a sufficient number of basic pieces of apparatus, such as seesaws, slides, and swings, to fulfill the demands of a normal number of children, and by furnishing, in addition, several "group" devices, such as merry-go-rounds and "whirls."

Next, the ages of the juveniles who will use the facilities must be carefully considered when the equipment is chosen. They may range from small tots to teen-agers and will, accordingly, require a wide range of equipment of various types and sizes. In this connection, it is always a good idea to segregate the smaller children from the larger not only because the latter may annoy them, but also because equipment designed for the use of younger juveniles could easily be damaged by older ones. By the same token, accidents may be prevented by keeping young children away from slides or similar devices that are too big for them.

Finally, drive-in playground apparatus, just as all other pieces of equipment in the theatre, requires a certain amount of care to keep it in good order. It should be kept clean and well-painted at all times, and any moving parts should be oiled constantly.

Supervision

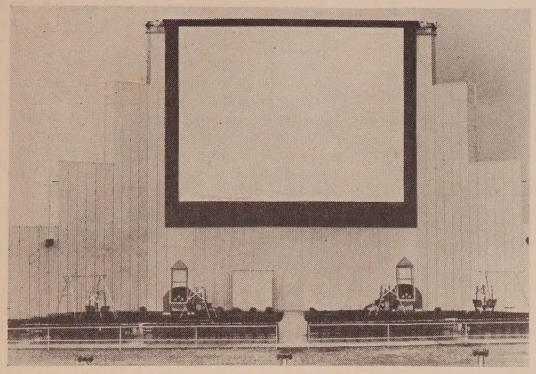
Although some drive-in operators do not feel that it is necessary to have simple playgrounds of this type constantly under vigilance, the manager or another responsible party must at least keep an eye on the area. All things considered, however, it is best to have a full-time supervisor in charge.

Someone like a teacher who knows how to deal with children can be extremely instrumental in settling minor disputes that may arise and in stopping practices which might result in accidents costly to the theatre.

Operating Policies

Nearly all drive-in operators are inclined to look upon the ordinary playground as part of their theatres' natural

POPULAR AMUSEMENTS AT SIDE ARE: 1. "miracle whirl" by Ahrens Manufacturing Co.; 2. chair swing by Hill's Playground Equipment Co.; 3. pony rides at the Gratiot Drive-In, Fraser, Mich.; 4. elephant slide by Hill's. BELOW: A typical installation of apparatus by American Playground Device Co.



INCLUDED IN THE PLAYGROUND SET-UP at the Buckner Drive-In, Dallas, are two elephants, four chair swings, and four chain swings by Hill's Playground Equipment Co. RIGHT: A wonderful time is enjoyed by young and old alike in the neat playground of the Gratiot Drive-In, Fraser, Mich.

facilities. Just as roofed house owners do not make a charge for the use of cry rooms, so outdoor exhibitors seldom, if ever, exact a fee for the use of playgrounds. The general feeling is that the investment in equipment is rapidly repaid by the goodwill created and the boost given to refreshment sales.

MECHANIZED RIDES

While the simple and stationary playground equipment described above serves as a formidable inducement in attracting the younger generation to outdoor theatres, the lure of a drive-in recreation area can be considerably strengthened with the installation of power-driven devices, either alone or in conjunction with ordinary playground equipment. The latter method seems to be most widely favored because two or three rides are usually the most that the average drive-in can afford, and even this number may prove insufficient to hold the continuing interest of children by themselves. Therefore, it is common practice to have available a certain amount of playground apparatus along with whatever mobile devices are installed.

Location

Since the operation of mechanized rides will undoubtedly be accompanied by more noise, due to the movement of the devices and the excited outbursts of the children, than that which crops up in a simple playground area, their location must be carefully selected. As a general rule, they should be set up in situations where there is no possibility that their operation will interfere with adult enjoyment of the show. Some exhibitors have placed these diversions at a reasonable distance away from the parked cars, but still within the theatre area proper. Others have installed them along the highway because of their advertising effect on passersby; such a location is also chosen so that they can be operated almost as a separate entity, open to the general public as well as to actual theatre patrons.

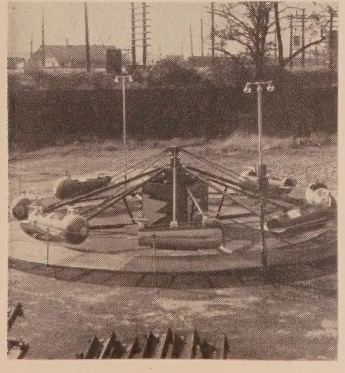
Whatever the location, the same safety measures should be taken to protect areas where rides are situated against traffic and other hazards as those followed in safeguarding ordinary playground sites. It is also advisable to set up benches or chairs near these areas so that parents may sit and watch their offspring, if they care to. Another reason for providing adult accommodations of this type lies in the fact that children will frequently want their parents to accompany them on rides, so facilities must be furnished for their comfort and relaxation also.

Equipment

It never pays to be "penny-wise" and "pound-foolish" in selecting mechanized devices any more than it does in choosing simple playground apparatus. Safety considerations, particularly, should deter the drive-in operator from ever purchasing an inferior piece of power-driven equipment. Only those rides which are produced by a reliable manufacturer and adequately tested should be considered. In this connection, regular inspections of installations by competent authorities are most helpful in uncovering any unexpected sources of danger. Full liability insurance coverage should, of course, be carried on all recreation operations of this type.

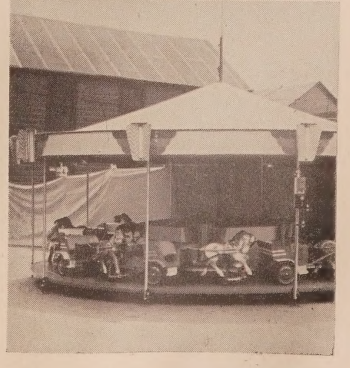
There are many types of amusement rides on the market today suitable for drive-in installation. Among the most popular currently in use are: miniature trains, motorboats, small ferris wheels, carousels, airplanes, buggies, etc. All of these come in a wide variety of sizes and prices, and it is up to the operator to select models which will fit his requirements and purse, while offering as much variety as possible. As pointed out previously, children will often want their parents to accompany them on rides, so the equipment chosen should be large enough and sufficiently strong to accommodate adults as well as juveniles.

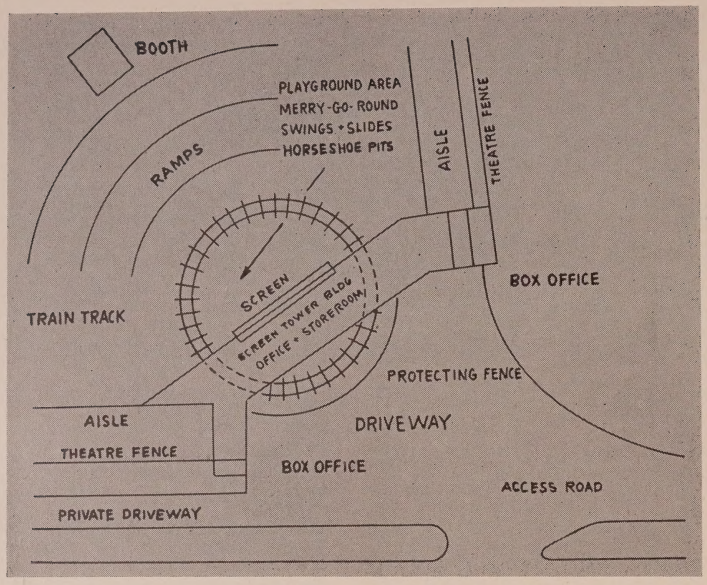
THIS IS THE "Sky Fighter Ride" by Allan Herschell Co. equipped with crackling machine guns.



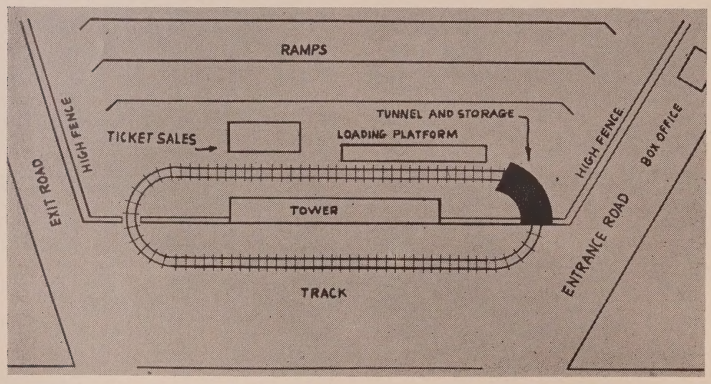
NEXT IS the "Kiddie Boat Ride" by the same firm with six fluid-drive, all-aluminum boats.

THIRD IS the "Kiddie Buggy Ride," also by Allan Herschell Co., which can handle 20 passengers.





THE PLOT PLAN ABOVE shows the compact arrangement of recreation facilities at the Motor-In Theatre, Malaga, Calif. BELOW: the neat layout of miniature train track at the Starlite, Medford, Ore.



A NOTABLE FEATURE of the Preston Drive-In, Louisville, Ky., is the small train by the Miniature Train Co. It runs on two tracks, one near the concession stand, while the other follows the highway.

Oftentimes, it will be possible to incorporate layouts for certain rides, such as miniature trains and motorboats, neatly into the landscaping scheme of the theatre. Tracks for the former can wind past and draw attention to certain interesting scenic features in the theatre grounds, while the latter may run along attractive water courses around the grounds and thereby add to their promotional value.

In addition to thorough inspections of mechanical devices by qualified experts at regular intervals, daily checks should also be made to make sure that there are no loose parts to cause trouble. All equipment should, naturally, be kept oiled, greased, and otherwise serviced. Careful storage during the closed season will help to maintain it in good working order.

Supervision

The very fact that they are mobile requires that mechanical rides be supervised. In spite of thorough safeguards, children often find ways to injure themselves with mechanical devices, and experience seems to indicate that an attendant is required for each single or pair of small rides to see to it that things go smoothly.

Supervisors should be chosen who not only understand the rides, but who also are fond of children and know how to handle them. Qualified women may be employed for supervisory jobs, provided they are granted sufficient authority and not given tasks which tax their strength unduly.

Operating Policies

The question of whether or not to charge a nominal fee for rides has been a subject of heated debate since they were first introduced to drive-in recreation areas. There are, of course, valid arguments on both sides.

Outdoor theatre operators who are opposed to charging admissions for rides contend that they should be regarded as extra services furnished free by the management. They feel that many patrons would be unwilling to pay for the cost of several rides on top of the charge for admission to the theatre. In other words, this group looks upon rides in the same way that roofed theatre operators

regard premiums — extras to be given away to patrons, not sold.

On the other hand, drive-in exhibitors in favor of slight charges for rides argue that they should be a source of revenue to the theatre, particularly because of the high initial investment required to purchase the equipment and the appreciable expenses of operation, insurance, maintenance, and supervision. Furthermore, they feel that in order to be able to provide a variety of rides sufficient to meet the demands of children, they must have the money to expand their purchases.

CONCLUSION

It has been conclusively proved that drive-ins with recreational facilities similar to those described above, plus such other diversions as pony rides and animal or bird exhibits, attract a good crowd to the theatre before the show actually starts. Some patrons will come a couple of hours early just to allow their children to enjoy these activities before the performance goes on, although they certainly may continue to play or use the rides in well-lighted and supervised areas after dark. This earlier opening hour increases attendance at the first show, and there are more parking spaces available for second-performance patrons.

Furthermore, children who come to an outdoor theatre early to take advantage of the recreational facilities offered will have a beneficial effect on refreshment stand sales. Exercise will inevitably make them hungry, so they will want something to eat, even though they may have already had dinner before leaving home. For this reason, it is often wise to locate the refreshment stand near the playground, and in some cases a separate stand may be set up or portable service units used. This increase in refreshment sales will often make up, in part at least, the additional cost of running the recreation area.

Finally, the drive-in operator who has installed recreational facilities of any type should be aggressive in promoting them. He should advertise them forcefully in his newspaper copy, handbills, direct mail pieces, etc. Properly exploited, they can draw children and their parents to the drive-in in the same way that a magnet draws steel.

ALWAYS A HIT WITH YOUNGSTERS is the speed boat ride above by King Amusement Co. BELOW: Another kiddie ride is the big red fire engine manufactured and distributed by Overland Amusements.

CIRCUMVENTING THE PLAYGROUND at the Reading Drive-In, Reading, Pa., is a small train which can hold a sizeable number of children in its cars. Note the operator's realistic engineer's head gear.

An Automatic Traffic Control System

A Unique Electric Signaling Device Clearly Shows Empty Speaker Stations on Board at Each Ramp Head

Although one of the greatest sales advantages that drive-in theatres hold over many roofed ones lies in the assurance to the patron that he definitely will have a parking place for his car, there is still some inconvenience to the customer involved in the frequent necessity for cruising down each ramp to locate a vacancy, to say nothing of the collision hazards involved. Of course, ramp boys are widely used to direct incoming cars to vacant spots, but oftentimes there are not enough of them to handle peak traffic loads, and many drivers actually are confused by and object to a lot of flashlight waving.

In an ingenious effort to overcome the aforementioned difficulties, Albert H. Reynolds, enterprising General Manager of Claude Ezell and Associates, recently invented and installed in four of the circuit's newer drive-ins (the Mansfield in Fort Worth, the Burnet in Austin, and the Hempstead and Irvington in Houston) a revolutionary automatic traffic control system that eliminates all need for ramp cruising and its accompanying accident hazards. Furthermore, installation of the system has enabled the Ezell management to effect an important saving in operating expenses by doing away with nearly all of the lot boys.

BRIEF: *The familiar drive-in sales slogan . . . "no parking worries" . . . is perfectly true . . . up to a point . . . Even though he knows that he will find one eventually, the driver of a car entering an outdoor theatre often has to do considerable hunting . . . before he finds an empty space . . . At peak hours particularly he may not attract the immediate attention of a lot boy . . . to guide him to a ramp where a vacancy is available.*

However, a progressive-minded circuit executive has come forth with a novel idea . . . that appears to be a panacea for this vexing problem . . . To find out how an indicator board . . . at the head of each ramp . . . plainly designates whether or not vacancies exist . . . and where they are . . . read on!

Design and Operation

As shown by the accompanying photographs and Fig. 1, the entire set-up is quite simple. An indicator board has been installed at the head of each ramp to inform the patron driving down the central roadway (into which all ramps feed) just how many speaker vacancies are available in that particular ramp and their locations. Thus, the driver of the car has only to glance at this directional speaker indicator to determine whether or not there is room for him.

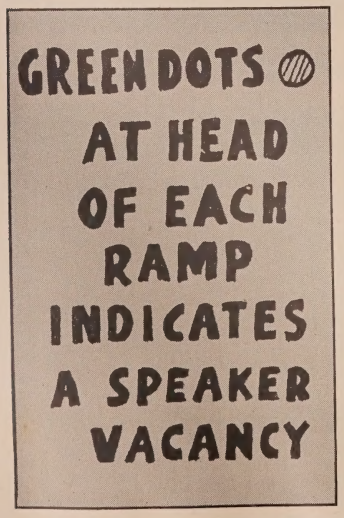
Information on speaker vacancies and their locations is shown by a series of small light globes on the face of the board. A push-button type of switch is installed on each side of every junction box from which two speakers are racked. These switches are designed so that pressure from any direction will depress the nosing. When a speaker is placed on the rack, the switch is pushed in by its weight to complete the circuit, and a green light flashes on the board in the globe corresponding to that particular speaker location. The word "Full" in large letters at the bottom of the board comes on automatically when the last speaker has been removed and the last light extinguished.

Since switches are cross-wired from each junction box, both speakers must be removed before one light on the board is turned out. Inasmuch as only one light signal is needed per station, only half as many light outlets are required. However, if individual speaker signals are desired, each speaker can be wired separately.

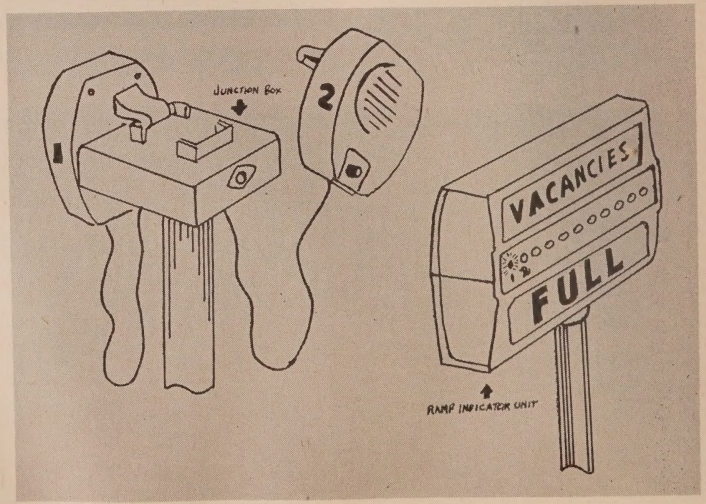
Plans are afoot to make new plates to replace the present "windows" on the indicator boards. Each board (see Fig 2) will be divided into three sections—left, center, and right—with only the letters "L", "C", and "R" visible to designate more precisely the locations of speaker vacancies. If the ramp is filled, the word "Full" will, of course, appear. However, the ramp number will be visible at all times.

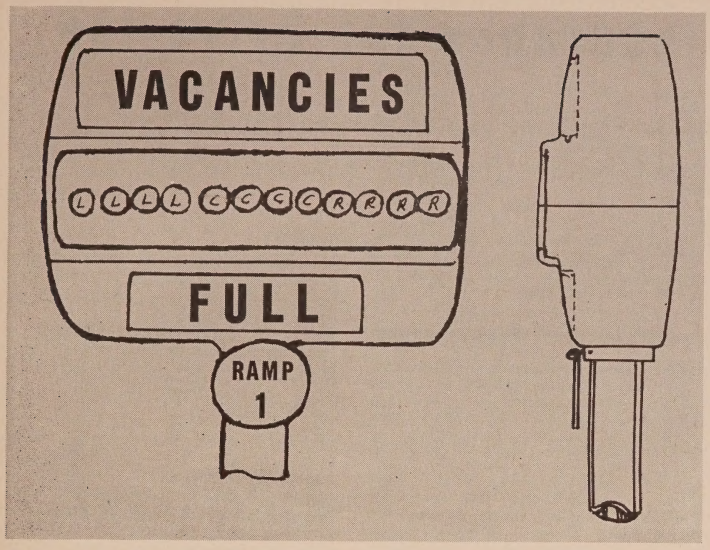
The system is designed to operate on 32 volts with a three-kilowatt transformer, although it can be worked on

TO ALERT PATRONS to the use of this indicator system in finding "seats," a sign similar to the above is advantageously placed near the box-office between it and the ramp area entrance.

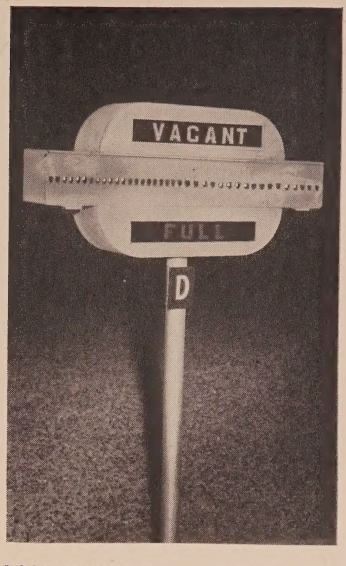


OPERATIONAL DIAGRAM shows the manner in which the ramp indicators are activated by plunger switches on the individual junction boxes. With Speaker No. 1 in its cradle, the vacancy light in the corresponding position on the indicator board at the end of that row is lighted. When Speaker No. 2 is removed from its cradle by an entering patron, the circuit is broken and its corresponding light goes out.





RAMP INDICATORS are cast in two sections accommodating a large variety and number of speaker lights. The word "VACANCY" is a plastic panel with painted letters partially illuminated by pin lights of vacant speakers. The word "FULL" is in cast letters with a unit light that flashes on when the last indicator light flashes off. The ramp number disc is attached with same bolt that secures indicator.



INITIAL INSTALLATION in a Claude Ezell newer drive-in. It is claimed that this new system stops hazardous "cruising" in the dark to find an empty space and removes need for ramp attendants.

110. The wiring was installed at the same time the speaker wire was run in the theatres where the system is now in use, and the junction boxes were drilled in advance by the speaker manufacturer. Although the Ezell management used approximately 125,000 feet of wire per theatre to rig up the system in each of the four 750-800 car drive-ins, this figure will, of course, vary with the size of the operation.

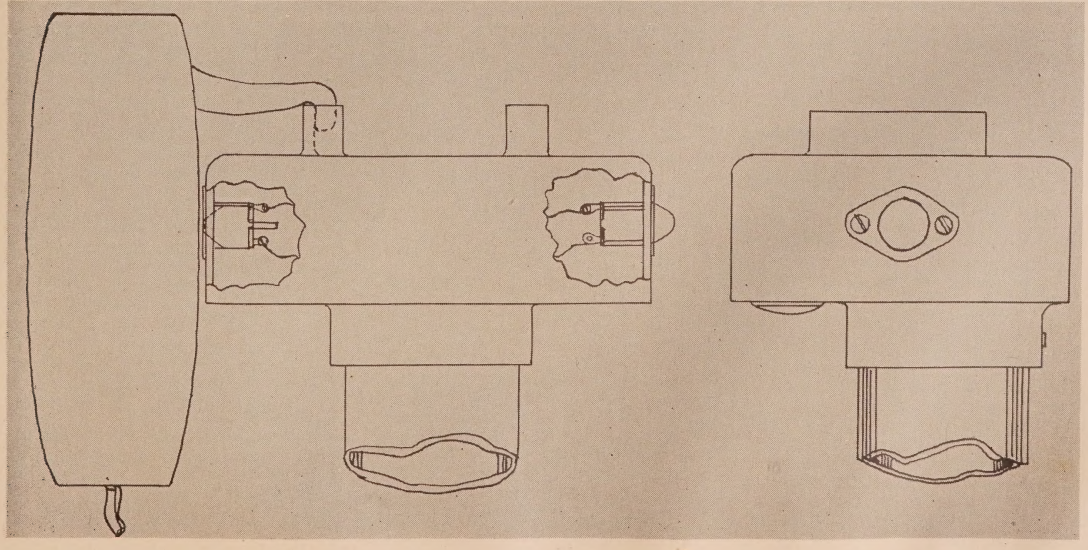
It should be noted, however, that considerably more expense would be involved in adding this traffic control system to drive-ins that have already been completed because the paving would have to be disturbed to run the extra wiring required. Furthermore, junction boxes would have to be removed and drilled, a job which could be performed by the drive-in owner or a local machine shop with a jig; there would be no real necessity for returning them to the original manufacturer for drilling.

Conclusion

Although present plans do not call for the design and installation of a central board in the manager's office or boxoffice, to which information or ramp vacancies could be transmitted from the individual ramp indicator boards for hold-out or checking purposes, Reynolds states that such a master panel could be added to advantage and may receive future consideration.

This automatic traffic control system is protected by U. S. Patent No. 159319 in the name of Albert H. Reynolds and is assigned to Ezell and Associates. Permission to use it can be obtained for a small fee.

ENGINEERING DETAILS of the junction box showing in cut-away sections the two plunger type switches. The very weight of the speaker in its cradle activates the switch and turns on the corresponding indicator light. Side view shows the size relationship of the switch to the junction box.



More About Insurance for Drive-Ins

Additional Light Is Shed on the Problems Involved In Seeking Proper Coverage for Many Contingencies

By M. Monroe Fass
and E. W. Collins
President and Insurance Manager, respectively, Fass & Wolper, Inc.

BRIEF: ***Although insurance underwriters . . . understandably enough . . . have not been able to match entirely as yet the phenomenal pace of drive-in construction . . . in the formulation of policies designed to cover all types of losses in this relatively new type of outdoor entertainment enterprise . . . considerable progress has been made in providing protection for the ozoner with its special problems . . . Even a year ago . . . as exemplified by the discussion on pp. 290 and 291 of the 1949-50 Edition of THEATRE CATALOG . . . a good bit of attention had already been given to drive-in insurance matters.***

During the past 12 months, interest on the part of the insurance industry . . . in the unique aspects of the outdoor theatre protection question . . . has steadily grown . . . The following article . . . written by two theatre insurance specialists . . . clearly indicates the latest thinking in this field . . . and covers such important forms of insurance as: fire and allied lines . . . use and occupancy . . . liability . . . compensation . . . burglary . . . and rain.

Today, as a year ago, the most important obstacle confronting a comprehensive survey of the insurance needs for the average drive-in theatre is the comparative infancy of the industry and the consequent lack of underwriting experience information available to the insurance companies. Without any guiding principles, insurance executives are loathe to quote rates and accept liability on risks which do not have sufficient experience rating to indicate what premium income is necessary to produce a safe underwriting margin. On the other hand, drive-in operators are fully cognizant of the inherent financial suicide that permeates any big business venture that attempts to operate without adequate protection against the unforeseen "accidents" that make insurance necessary. Our biggest problem, therefore, is to devise an insurance schedule that is acceptable to both the theatre owner and the insurance underwriter.

It is not the intention of this article to burden the reader with the problems of underwriting that beset the insurance companies. However, where practical, we shall mention the possibilities of installing safety devices or alarm systems in order to reduce the incidence of losses that is expected. The "ounce of prevention," applied this early in the career of the drive-in, can have a far-reaching and long-lasting effect on the rates that will prevail in the years to come.

Fire and Allied Lines

The first type of insurance to be considered in any survey is Fire and its allied lines. The basic fire policy, written for an amount not less than 80% of the total value of screen, projection room, office, concession stand, and all other real property, both buildings and contents, should be endorsed with special riders for comprehensive coverage. The rates naturally vary according to the construction and inflammability of buildings and their contents, the fire fighting equipment available, water supply, nearness to a fire house, susceptibility of the area to windstorm, and a host of other conditions that are far too numerous to mention here. Regardless of cost, the value of a fire policy cannot be over-rated when we consider that one carelessly discarded match can wipe out thousands of dollars worth of valuable buildings and equipment.

Use and Occupancy

Unfortunately, the ravages of a fire do not end when the last stubborn flame has at last succumbed to the blanket of chemical from an extinguisher or the red hot ashes finally hiss out their last bit of defiance at the conquering stream of water, for the operator faces weeks or months of inactivity while his gutted buildings and equipment are being repaired or replaced for a re-opening.

This naturally leads us to a type of insurance that is often overlooked or discarded as unnecessary by all too many operators—Use and Occupancy, or Business Interruption Insurance. Use and Occupancy Policies insure against the loss of earnings resulting from interruption of business by any of the perils insured against. Net profit is covered to the extent that it is prevented from being earned. The salaries of officers and key employees are also covered as well as all necessary continuing expenses. The ordinary payroll of secondary employees may be covered for a period of 90 days by endorsement.

If an outside source of power is used, it is important that the Off Premises Power Endorsement be added to all Use and Occupancy Policies.

A number of years ago, we succeeded in collecting loss of revenue and cost of operation for one of our customers owning a theatre in Detroit. The loss of business was occasioned by the riots in downtown Detroit. The loss reimbursement under the policy was directly due to proper endorsements on the Use and Occupancy Policy.

Here again, the rates vary depending on the particular drive-in and the extent of coverage required.

Liability

Liability insurance poses the biggest problem of all to both the drive-in operator and the insurance carrier. Here we have the real unknown quantity. How many people will get hurt while attending a particular theatre next year? How much will each one sue for? How much will it cost to defend each suit? What will be the amount of any verdicts which may be handed down in favor of these plaintiffs? If we could answer these questions, the cost of liability insurance and its desirability to the insurance companies would be an easy matter of a few arithmetical calculations. To date we do not have all the answers, but the majority of the companies we have approached all seem willing to go along on the basis of established rates applicable to indoor theatres, provided that the management is sound and experienced and a few safety rules are adhered to. Experience Rating credits or debits can be applied to these policies after a period of time.

A Comprehensive Liability Policy (C.P.L.) should be secured after all leases and agreements have been discussed with a representative of the insurance carrier. This precaution is advisable in order that any "hold harmless" or "contracted liability" clauses may be uncovered and the operator properly protected against them.

We recommend that every operator planning to take control of a drive-in site through lease confer with his insurance broker to make certain that the insurance clauses that he obligates himself to under the terms of the lease can actually be fulfilled by contract.

The Liability policy should be written with a lower limit of at least $100,000 for bodily injury and an upper limit depending on the theatre and the willingness of the insurance carrier to afford a high degree of protection. Medical Payments in a limit of at least $10,000 should be written along with the bodily injury insurance.

Under the property damage section of the C. P. L. it is important to remember that the policy does not cover any losses to a patron's property while it is in the care or custody of an employee.

If any contracts are entered into after a C. P. L. is effective, a copy of the contract should be forwarded to the insurance carrier at once in order that the proper coverage may be added.

Compensation

Workmen's Compensation Insurance is generally covered by state law, and there is no need to expand on it here. Disability Benefits Insurance must be carried in some states, and it would be well for the drive-in owner to check to

see that he is properly covered for his locality.

Burglary

The location of the average drive-in theatre makes it easy prey for the burglar or sneak-thief. Usually located on the outskirts of police protection and encompassing a large area which is practically deserted during the greater portion of the day, the outdoor theatre presents many unique questions to those who seek to eliminate loss of funds or equipment from the operation enclosures. Only too often, "trusted" employees are the parties responsible for the disappearance of the assets.

A few short years ago, the insurance carriers were willing to afford only meager protection to the drive-in operators who were interested in burglary, theft, and dishonesty coverage. Today, the picture has changed, and more companies are inclined to write comprehensive policies which include all of the needed coverages under one contract.

The most important phase of this comprehensive policy is the one that deals with the bonding of employees. There are several forms of this coverage, the most important being the Primary Commercial Blanket form and the Blanket Position Bond. We show a perference to one form of these two important coverages. However, there have been circumstances where we recommended the other as more suitable to the particular case. Care should be taken not to underestimate the amount of coverage needed because many dishonesty losses are weeks or even months "in the making" before they are discovered.

Other considerations under these policies are the Broad Form Money and Securities Protection, Safe Deposit Box Coverage, Mercantile Open Stock Burglary and Theft, and Payroll Insurance. There are other forms of coverage included in this policy, such as Depositors Forgery and Incoming Check Forgery, but they are rarely needed in the drive-in trade.

There is such a wide divergence of burglary rates throughout the United States, depending on location, police protection, and incidence of loss in a particular area, that it is impossible to estimate the cost of the foregoing protection in an article as general as this. The use of burglar-proof safes, approved alarm systems, night watchmen, and many other burglar-foiling devices make the drive-in more desirable to the insurance carrier and have the added feature of materially reducing rates.

Special All-Risk

There are several all-risk coverages available to the drive-in operator today. Most important of these are the Neon Sign Floater and the Movable Equipment Floaters. Expensive Neon and Electrical Signs may be insured for a rate of approximately 3½% against all direct loss or damage however caused, with a few minor exceptions. This type of insurance may also be procured for some types of movable equipment such as lenses.

Rain

The need for rain insurance is not very great, yet this type of insurance is available for the prudent operator who may be seeking to protect a "big night" against a washout. There are two types of rain contracts issued—the first, or Form A, is written on a 100% basis, which means that the operator must carry a policy for 100% of his anticipated income. The policy covers a period of at least three hours, during which time 1/20 or 1/10 inch of rain must fall, depending on the conditions of the contract. The insured selects the three hours he wants covered, and all readings are taken at the nearest U. S. weather station. A typical rate for this insurance in the New York metropolitan area during the month of September would be 8% for 1/10 inch and 10.4% for 1/20 inch.

Form D rain policy is issued in an amount not to exceed 60% of the gross income for similar previous exhibitions. All other conditions follow the general outline of Form A, and comparable rates would be 10% for 1/10 inch and 13% for 1/20 inch. Form D is a more flexible contract and would be the more desirable type in most instances.

Personal

Personal insurance for operators, such as Partnerships, Sole Proprietor, or Key Man Life insurance and Accident and Health policies, constitute a field of their own, and no attempt will be made to discuss them here.

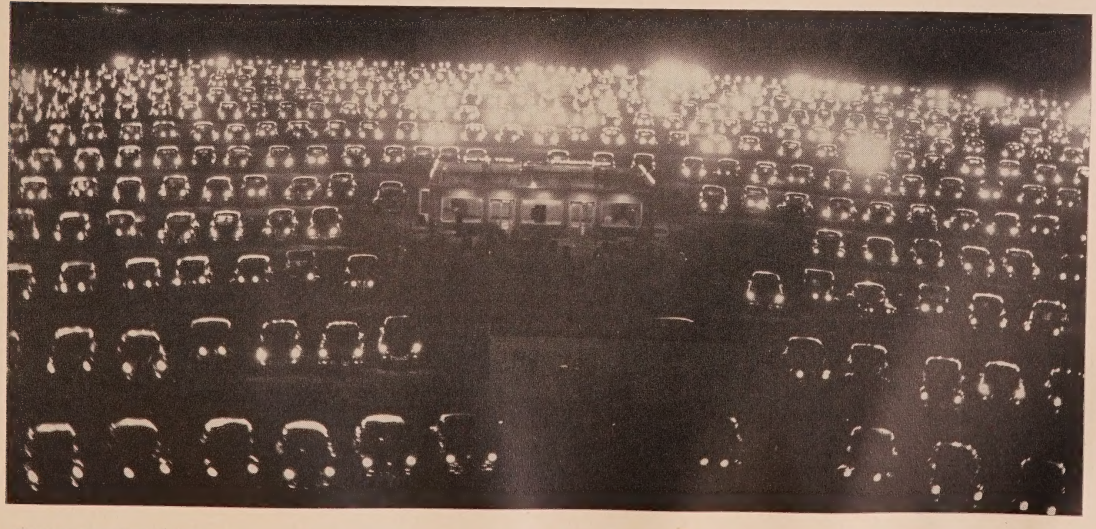
Conclusion and Summary

This article is intended only as a general guide to the various coverages that are available to the drive-in operator, but care should be taken that each theatre is discussed as an individual problem with a competent broker or agent because the constant desire for something new and the very individuality of each owner, as expressed in the plan and operation of his theatre, forbids the use of a hard and fast rule for surveying drive-in needs. Savings can also be effected on premiums paid under a group drive-in plan.

Even as this article is published, the success of the "Kiddie-Lands" now run in conjunction with drive-ins warns us that we will be faced with a new insurance problem in the very near future.

It is not difficult or complicated to write an insurance policy and to pay the premium. The two important items are to write the correct policy with the proper endorsements and then to be properly reimbursed when a loss occurs.

THE ACCIDENTAL POTENTIAL inherent in a drive-in theatre can best be understood by a thoughtful consideration of this interesting photograph taken from the top of the screen tower at the Keno Family Drive-In, Kenosha, Wisconsin. All cars were asked to turn on their lights during the intermission and a four-minute time exposure was made. On a crowded night, as the last scene fades, this exact condition exists, and without marked roadsides 500 to 1000 cars switch on their headlights and start a jam for the exits. This is one need for proper insurance coverage.



Incidental Equipment and Supplies

A Detailed List of Small, but Important, Items Essential to Smooth Drive-In Theatre Operation

By Albert Bernstein
Managing Director, Bellwood Drive-In Bellwood, Va.

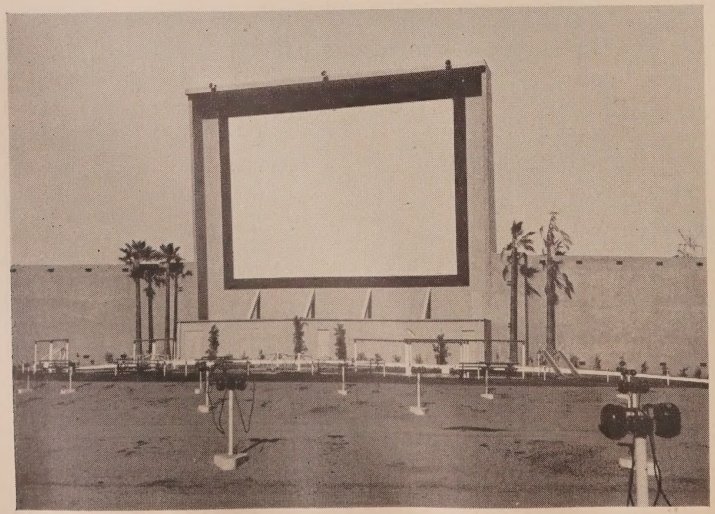
BRIEF: ***Although they may be its basic components, many items other than the obvious ones . . . such as speakers, screen, projection booth, etc. . . . are required to launch and maintain a drive-in operation . . . There is literally a myriad of other equipment and supplies . . . which run the gamut from flashlights to jeeps . . . required to keep the machinery of an outdoor theatre running smoothly . . . Due to their relatively incidental nature, such necessaries as raincoats and helmets are seldom thought of . . . but failure to have them on hand will cause a lot of unnecessary difficulty when the need for them arises.***

The following check list of specific and miscellaneous equipment and supplies . . . for every facet of a drive-in operation . . . has been compiled by an experienced outdoor showman to aid others in keeping a full inventory on hand . . . A copy hung on the theatre office wall will serve as a constant reminder of the so-called "little things" to be kept in stock . . . lest they be forgotten.

Although they both have a single objective—the presentation of a good motion picture performance in comfortable surroundings—the drive-in theatre operator achieves this goal by different ways and means than his roofed theatre brother. The former confronts a distinctly different set of problems, due to the very nature of his operation. The outdoor showman, for example, is, for the most part, serving patrons in automobiles, whereas the indoor theatreman opens his house to pedestrians. This feature, of course, is greatly responsible for the creation of sound arrangements, screen sizes, more powerful projection machines, etc., which are quite foreign to the conventional theatre. In short, the absence of a roof, ceiling, four walls, and a floor in a drive-in spells in itself the difference between it and an indoor operation.

The wide gap which separates the two types of theatres extends right down through the equipment and supplies which are needed for their respective operations. Although there may be some points of similarity, such as in the equipment and furnishings required for toilet rooms, there are some items which are "musts" on the drive-in operator's list of supplies which the roofed theatre operator's supply list would never include. For example, due to its exposure to the elements, there may arise numerous occasions when drive-in ramp boys will require raincoats to protect them during downpours; by contrast, there is little need for them in the roofed theatre because ushers, or doormen either, for that matter, seldom have occasion to venture outdoors. Other marked examples of the equipment and supplies required by the drive-in which have no place in the conventional theatre will be noted in the following list.

WHITTIER, PICO, CALIF., owned by Pacific Drive-In Theatres. Not only the merry-go-rounds, swings, slides, teeteriotter, and gymnasium equipment, but the big 68 foot wide screen and other expensive features necessary to 1225 cars, pose many problems that will require a full kit of miscellaneous supplies.



Cleaning and Sanitation

Brooms
Buckets, mop
Can, trash
Cleaner, floor
Cleaner, window
Disinfectant
Handles, mop
Incinerator
Mops
Pails
Rags
Wagon, trash-hauling
Wringer, mop

Maintenance and Repair

Brushes, paint
Gravel, for fill
Hammer
Hose
Iron, soldering
Ladders, "A" type
Lawnmower
Nails
Neon, repairs, arrangements for
Paint, general
Paint, white, for poles
Pliers
Rakes
Saw
Scaffolding
Screwdriver
Shovels
Solder
Sprinkler, lawn
Stepladder
Tacks
Turpentine
Wrenches

Toilet Rooms

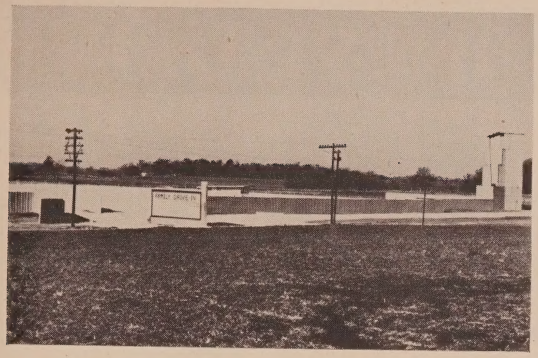
Brushes, bowl
Chair, ladies' room
Disinfecting, service for
*Dispensers, paper towel
Dispensers, toilet paper
Dispensers, hand soap
Disposals, sanitary napkin
Mirror, ladies' room
Napkins, sanitary
Paper, toilet
Receptacles, paper towel and tissue
Soap, hand
Table, ladies' room
*Towels, paper
*Waste container
*or a Hand Dryer

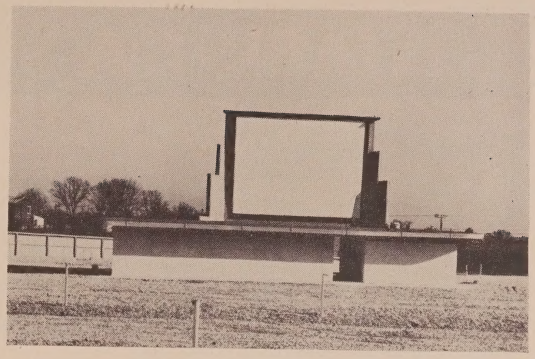
Safety

Extinguishers, fire
Flashlights, baton type
Flashlights, police type
Kit, first aid

Management

Bags, night deposit
Bands, rubber





THE "TURN-KEY" PACKAGE as here illustrated at the Family Drive-In, Jasper, Indiana, constructed by Tom Griffing and completely equipped with projection, sound and speakers by Ballantyne Company under a joint contract, includes much of the incidental operating equipment and supplies that are here listed. However, even here, there will be an amazing amount of "little things" purchased during the first few weeks.

Banking, arrangements for
Blinds, venetian
Boards, clip
Books, employee time
Boxes, cash
Cabinet, filing
Cabinet, metal
Cabinet, ticket
Calendar, desk
Case, brief
Chair, desk
Choppers, ticket
Clock, booth
Clock, office
Desk
Door, screened, for manager's office
Eradicator, ink
Flags, decoration
Folders, manila
Glass, desk
Ink
Keys, master door
Labels, shipping
Machine, adding
Machine, stapling
Machine, ticket
Pads, stamp
Pads, telephone
Paper, carbon
Paper, scratch
Passes, courtesy and advertising
Passes, refund
Pencils
Safe, burglarproof
Scale, postage
Sharpener, pencil
Signs, admission price
Signs, entrance
Signs, exit
Stamp, date
Staples
Stationery
System, inter-com
Tacks, thumb
Tags, marking
Tape, scotch, and holder
Telephone
Telephone, extension, ticket office
Tickets, admission
Tickets, refund
Tickets, tax
Typewriter
Wrappers, money

Projection and Sound

Alarms, reel
Boxes, junction, spare
Brush, cement
Carbons
Cement, film
Cheesecloth, for lens cleaning
Cords, speaker, spare
Holder, cement
Lugs, speaker and terminal, spare
Marker, cue
Microphone, booth
Oil, projector
Parts, speaker, spare
Player, record, booth
Records
Rewinder, enclosed
Speakers, spare

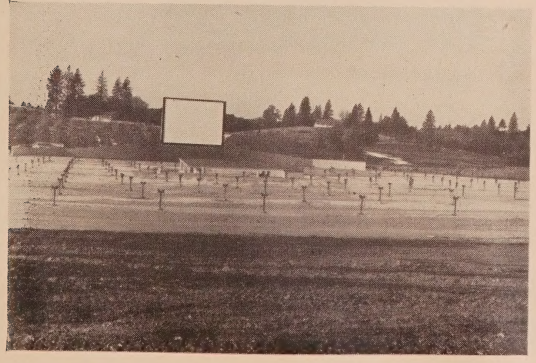
Refreshment Vending

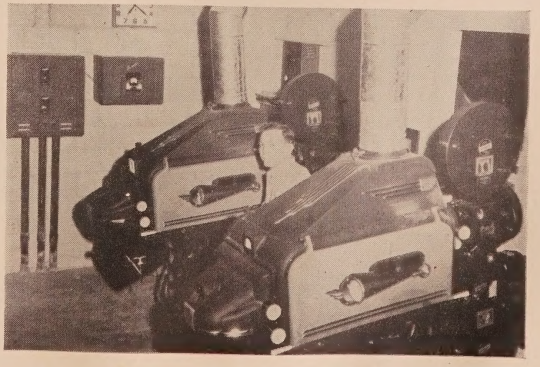
Coats, linen, arrangements for
Sink, double, for refreshment stand

Miscellaneous and General

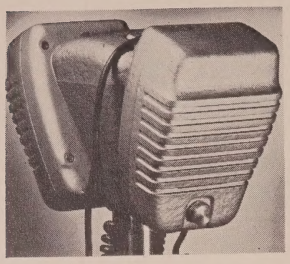
Batteries
Boards, sheet
Bulbs, spare
Can, gasoline
Car (or Jeep), for towing and transportation
Chains, for entrances and exits
Checks, door
Coats, ushers'
Cups, water
Dispensers, cup
Equipment, playground
Fans, electric
Fuses, spare
Helmets, white pith, for ramp boys in rain
Insects, control for
Jack, auto, garage-type
Letters, display board
Pump, sump, for well room
Raincoats, white circles painted on front and back, for ramp boys
Tools, tire-changing
Whistles

SE-RANCHO DRIVE-IN, Placersville, Calif., accommodates 460 cars in twelve ramps on what was formerly a pear orchard. Owners V. Banta, C. Freitas and L. Freitas installed Simplex projectors and sound. Peerless lamps, a Hertner generator, Simplex speakers, Kollmorgen lenses, and a load of confection and playground items. But they still face a long list of smaller items that must be on hand for efficient operation.

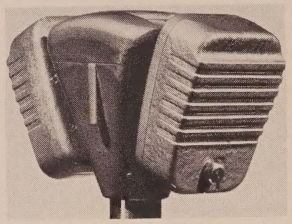




AMERICA'S FINEST DRIVE

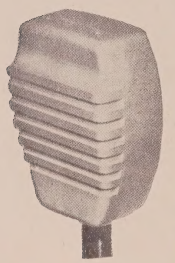


IN-A-CAR SPEAKER (Senior) — Most advanced electronic and mechanically designed, Transformer tapped for 2500 and 7500 OHM impedance, now possible to achieve. The unit features amplitude and faithful reproduction of sound heretofore unknown in a speaker of this type.



IN-A-CAR SPEAKER (Junior) — For the small drive-in theatre desiring a less expensive speaker. Unexcelled at similar price. No sacrifice in quality or fidelity of tone. Volume controlled by potentiometer. Housing, workmanship and materials all comparable to "Senior."

Above speakers complete, less junction box, may be purchased to replace any make you may have stolen or damaged.

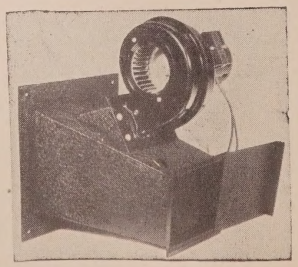


STANDEE SPEAKER — For coverage of your playground and walk-in patrons' seating, for rear ramps, for trucks and for overflow crowds. Cast aluminum housing 6″ x 9″ waterproof speaker, withstands weather and abuse. Transformer impedance 2500 and 7500 OHM taps. Can be pre set to any desired volume, tamper proof. The ideal speaker for the purpose.

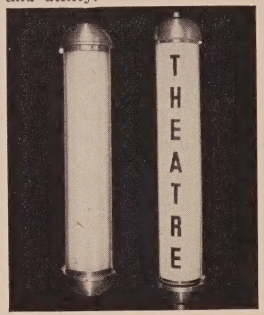
CONCESSION LIGHT — Install a concession light on all sides of your concession stand. Make it easy for your patrons to find! Other special panels available.

A STANDARD PROJECTION BOOTH ITEM

PROJECTION PORTHOLE BLOWER — The DIT-MCO projector lens protector keeps dust, rain and insects from entering projection port. Assures clean, flawless projection. Eliminates need for optical glass in porthole openings. Blower also acts as an auxiliary exhaust. This much needed booth accessory is of value in indoor theatres as well as drive-ins in protecting your coated lenses.



SCREEN TOWER — TWO TYPES—TRUSS and BEAM. Both of these types have been redesigned to provide housing facilities in the base which can be used for offices, storage, living quarters or concessions. All DIT-MCO towers designed and built in strict conformance to American Institute of Steel Construction specifications. Will resist winds of 30 lb. per square foot equal to a 90 mph gale. Get prices and particulars on DIT-MCO towers before you buy — for maximum beauty, strength, performance and utility.

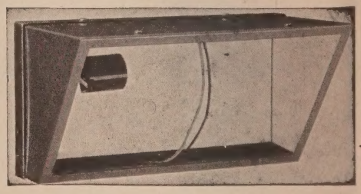


NITE KING LIGHTS — Available in three types. Post type, Post Base type, and wall type (half round). Also available with 4 - 6 or 8 tubes. Plastic letters mounted in half round plastic panel also available.

ENTRANCE LIGHT — Speed up the traffic into your drive-in theatre. Make it easy for your patrons to locate the entrance drive of your theatre. Eliminate confusion and congestion which causes disgruntled patrons—and which means loss of dollars.

EXIT LIGHTS — Two Sizes—40″ x 15″ x 6″ and 20″ x 15″ x 6″. Speeds traffic out of the theatre avoiding confusion and congestion. Make it easy for your patrons to follow the signs and direct them in a steady direct flow to exits. All 40″ x 15″ x 6″ lights available either double or single face.

SMALL LIGHT FIXTURES—For post or fence mounting. Panels exit, arrow right or left to be installed at exit end of each ramp to speed up emptying of drive-in; also opaque panels for lighting entrance or exit driveway. Panels reading "MENS" or "LADIES" available.



DRIVE-IN THEATRE MFG. CO., Inc.

PLACE
STAMP
HERE

DRIVE-IN THEATRE MFG. CO., INC.

729 Baltimore Avenue

Kansas City 6, Mo.

Without obligation on my part, please send additional information on items checked below.

- ☐ IN-A-CAR SPEAKERS (Senior)
- ☐ IN-A-CAR SPEAKERS (Junior)
- ☐ STANDEE SPEAKER
- ☐ SCREEN TOWER
- ☐ DRIVE WAY LIGHTING
- ☐ RAMP LIGHTS
- ☐ ENTRANCE - EXIT LIGHTS
- ☐ EMERGENCY LIGHTING
- ☐ CENTER AISLE LIGHT
- ☐ NITE KING LIGHTS
- ☐ MENS - EXIT - CONCESSION SIGNS
- ☐ PROJECTION PORT HOLE BLOWER
- ☐ VENDING CART
- ☐ DRAG BROOMS
- ☐ SCREEN PAINT
- ☐ POSTER FRAMES
- ☐ BURIAL CABLE - KOILED CORDS
- ☐ REPLACEMENT SPEAKERS
- ☐ SPEAKER RECONEING
- ☐ TRANSFORMERS

NAME.....

COMPANY OR THEATRE.....

ADDRESS.....

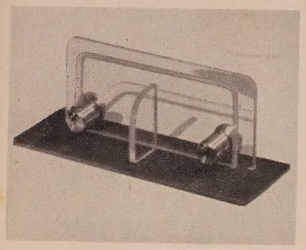
TITLE.....

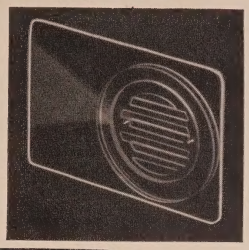
ands weather and

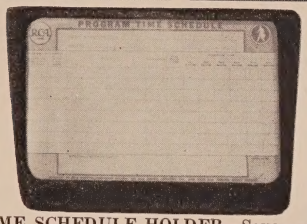
ENTRANCE LIGHT

-IN THEATRE EQUIPMENT

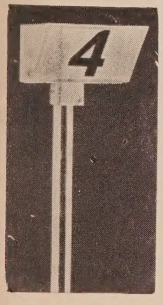
"BOX OFFICE MUSTS"





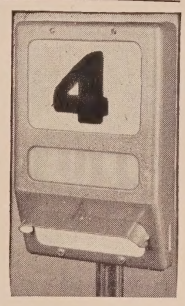


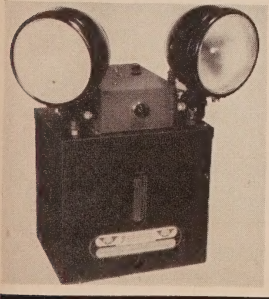
PROGRAM TIME SCHEDULE HOLDER—Saves cashiers time in answering patrons' questions as to show time. A convenience to patrons. Also available for wall mounting in booth, concession stand or manager's office. Constructed of tempered presdwood to withstand hard usage. When ordering specify desk or wall mounting. **BOX OFFICE TICKET and CHANGE MAKING SPACE LOCK.** Covers ticket opening in boxoffice window in cold weather when cashier is not selling tickets. Can be locked in place when cashier leaves and can only be opened from inside boxoffice. Made for any size opening. Made of heavy plastic. Locks of aluminum. Sketch giving opening size must accompany order. **SPEAKER OPENING GRILLE**—Plastic disks with offset louvres permits perfect hearing yet prevents cold air from rushing into ticket booth. For any size round speaker opening, easily attached.



CENTER AISLE LIGHT—Make it easier for patrons to get to and from concession stand by properly marking ramps at center aisle.

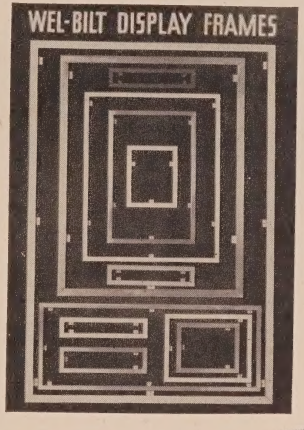
AMERICA'S FINEST RAMP IDENTIFICATION AND DRIVEWAY FLOODLIGHT — The one and only original patented ramp light serving a 3 way purpose ramp numeral —full sign and driveway floodlight.





EMERGENCY PORTABLE LIGHTING UNIT—This light is needed in every theatre, indoor or drive-in to eliminate panic in case of power failure. The cheapest insurance available.

COCA-COLA VENDING CART—America's Finest — largest capacity — most mobile — most economical vending cart. Overall size 65½" long, 37" wide, 41½" high. Take the concession stand products to the cars. Operators report from 16% to 36% increase in refreshment business by use of this cart. Ruggedly constructed to stand hard usage.



WEL-BILT DISPLAY FRAMES—An economical investment for your advertising needs. Their enduring brilliance attracts every eye to your sales message and gives it a progressive modern appearance. These Brite-Chrome frames are strong, durable and non-warping with specially constructed corners for unusual rigidity. The finish will remain bright indefinitely.

America's Finest Drive-In Theatre Screen Paint. High titanium content — the whitest known white pigment. Produces a non-glossy flat surface to give unexcelled picture projection. Black masking paint also available.

OTHER DIT-MCO PRODUCTS

POST LIGHT TRANSFORMERS
SERVICE SAVERS (Carry out trays)
NEO-SEAL BURIAL WIRE: 12-2, 14-2 solid or stranded
SCREEN ADHESIVE and GLASS SCREEN BEADS
LADDERS, SAFETY — Wood or Aluminum
PAINTS — Exterior and Interior
PAINTS — Exterior and Interior (See price list)
REPLACEMENT SPEAKER CORDS
REPLACEMENT INSIDE SPEAKER UNITS — all sizes
SPEAKER RECONEING

Use Attached Reply Card — or — Write — Wire — Phone for Complete Information

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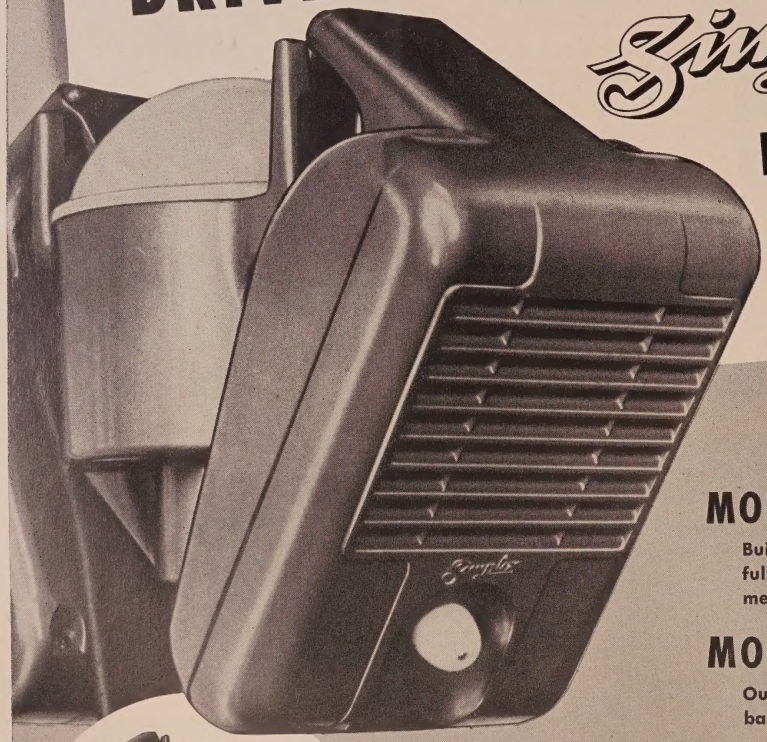
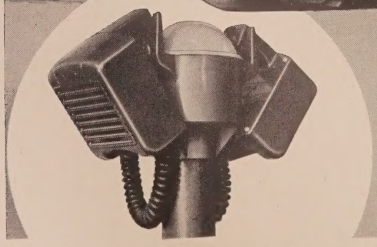
MORE

DRIVE-IN THEATRES USE

Simplex
REG. U.S. PAT. OFF.

IN-A-CAR SPEAKERS





MORE RUGGED!
Built to take plenty of abuse... full protection against the elements.

MORE DEPENDABLE!
Outlasts all others . . . at lowest basic maintenance expense.

MORE TONE QUALITY!
Finest clearest tone . . . from full-off to full-on.

MANUFACTURED BY INTERNATIONAL PROJECTOR CORPORATION
BLOOMFIELD, NEW JERSEY

DISTRIBUTED BY
NATIONAL THEATRE SUPPLY

Equipment & Supplies For Every Theatre Need
NATIONAL THEATRE SUPPLY
Division of National • Simplex • Bladworth, Inc.

DRIVE-IN BIZ BOOMS with Kiddieland

EASY TO ERECT!
EASY TO EXPAND!

Here's drive-in appeal for the entire family!

Spectacular KIDDIELAND provides just that extra crowd-drawing attraction you've been looking for!

Imagine—roller coasters, kiddie fire engines, airliner swings and dozens of other exciting features for all kids from 2 to 92.

Here are just a few advantages you get from KIDDIELAND:

DAYTIME PROFIT IN NON-SHOW HOURS!
GOOD WILL FROM LOCAL FAMILIES!
EXTRA DRAWING CARD FOR PICTURES!
NEW REVENUE FROM OLD PROPERTY!
ALL RIDES PARENT-APPROVED!

You can't afford to miss up on this newest, most entertaining branch of show business.

NATIONAL will meet every need, supply every item, furnish all the know-how necessary for a successful, money-making **KIDDIELAND.**

A profitable KIDDIELAND is easy . . . the NATIONAL way!

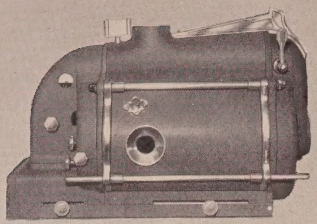
DISTRIBUTED BY

NATIONAL THEATRE SUPPLY

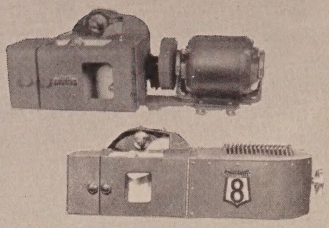
Equipment & Supplies For Every Theatre Need

NATIONAL THEATRE SUPPLY

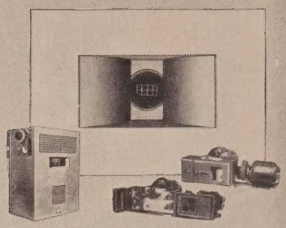
Division of National • Simplex • Bladworth, Inc.



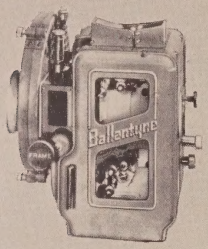
Lightmaster Model 4570 arc lamp. 45 to 70 amperes. Provides brilliant light for even the largest theatre or drive-in.



Royal Soundmaster Soundheads. Recognized as the world's leading reproducer. Provides smooth, quiet, trouble-free operation.



Royal Soundmaster Complete Sound Systems. For theatres of any size. Includes Soundheads, single or dual channel Amplifier, and Two-Way Horn System.



Model "BW" Projector. Endorsed, approved, and installed as standard by many leading circuits.

Comparison *PROVES* BALLANTYNE

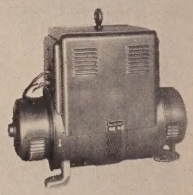
is your Best Buy for

QUALITY OF PERFORMANCE
QUALITY OF WORKMANSHIP
ECONOMY OF OPERATION

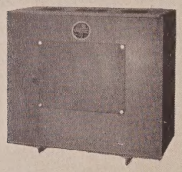
Ballantyne urges you to COMPARE equipment . . . then ask *any* theatre owner now using Ballantyne. You'll convince yourself that Ballantyne is the outstanding sound and projection equipment value on the market. Ballantyne offers MORE in quality of performance, MORE in economy of operation, MORE in faithful, trouble-free service.

Write for your Ballantyne catalog . . . 40 pages of detailed descriptions and illustrations of the complete Ballantyne line of sound and projection equipment, and accessories for the theatre. It's the most complete theatre equipment catalog available. Also, available is a special colorful catalog of complete drive-in equipment. Send for your catalog, or see your nearest Ballantyne dealer for literature and prices on equipment you need.

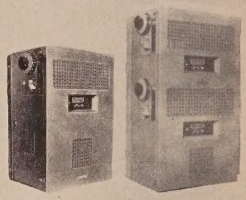
THE BALLANTYNE CO.
1707 Davenport St. Omaha, Nebraska, U.S.A.



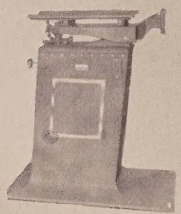
Lightmaster Motor Generator. Available in 70-140 amp, 80-160 amp, or 100-200 amp.



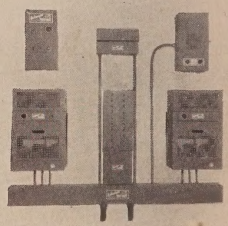
Lightmaster Rectifiers. The world's most complete line — for any size threatre — from 40 to 90 ampere.



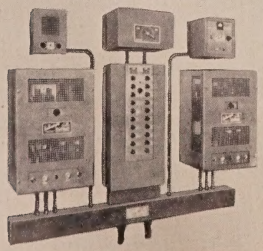
Royal Soundmaster Amplifiers. No amplifier on market compares in features and low cost. Available in single channel and dual channel with instant changeover switch.



Soundmaster Bases. Over 200 pounds of weight gives perfect rigidity. Available with reverse tilt support arm for drive-in theatres at no extra cost.

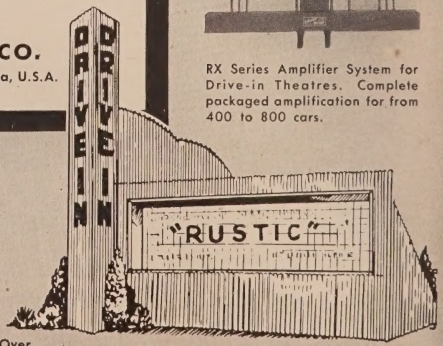


RX Series Amplifier System for Drive-in Theatres. Complete packaged amplification for from 400 to 800 cars.



MX Series DeLuxe Amplifier System for larger Drive-ins of from 400 to 1200 cars. Available in single or dual channel.

Soundmaster In-A-Car Speakers. Over 150,000 in use today. Unsurpassed for quality of tone, and durability . . . yet priced less than anything comparable.



Completely prefabricated "rustic" drive-in theatre including equipment at a low package price.

This space reserved for

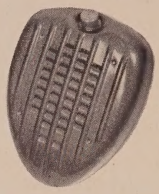
DIECAST ALUMINUM SPEAKERS, INC.

2027-29 S. SECOND STREET

ST. LOUIS 4, MISSOURI

The World's Most COMPLETE Line of Speakers

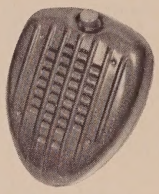
"TECA" DELUXE SPEAKER



A high quality, stamped steel, baked enamel finish speaker, specially built for top performance.

- Underwater marine special primer
- The best driver unit
- 2.15 oz. magnet
- Quick disconnects
- The best volume control
- One-screw assembly
- Easily installed

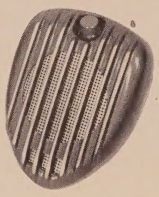
"TECA" CHROME SPEAKER



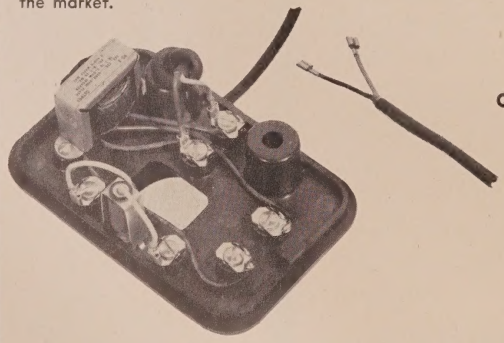
A stamped steel CHROME-plated speaker designed for beauty, performance, and durability.

- Hard chrome over a separate nickel and copper base
- The best volume control
- Quick disconnects
- The best driver unit
- One-screw assembly
- 2.15 oz. magnet
- Easily installed

"TECA" CUSTOM SPEAKER



The ultimate in speakers. This cast ALUMINUM speaker gives the appearance of a custom-made job. The 2.15 oz. magnet gives the highest efficiency. Only the best driver unit and volume control used. Simple assembly and quick disconnect terminals make this the easiest speaker to install or disconnect. Every step has been taken to make this the best speaker on the market.



QUICK DISCONNECTS . . . A "TECA" EXCLUSIVE

Every Teca glow-top junction box is equipped with exclusive disconnects . . . permits connecting without tools.

SEE US FOR REPLACEMENT SPEAKERS

●

DRIVE-INS AND THEATRES are INVITED to CONTACT US for the FINEST IN THEATRE EQUIPMENT

●

Write for FREE literature

THEATRE EQUIPMENT COMPANY

107 MICHIGAN STREET • Phone ADams 8107 • TOLEDO, OHIO

TECA "In-The-Car" SPEAKERS

Teca's broad line affords a speaker to fit any budget.

Teca speakers were the sensation of the 1950 Theatre Equipment Convention, where they functioned perfectly in the grueling steam jar. Life of Teca Speakers has averaged better than 30 days under the brutal punishment of the steam chest in our laboratory . . . equal to many years of actual service.

●

PLACE YOUR ORDER NOW *for* DRIVE-IN THEATRE CONSTRUCTION

●

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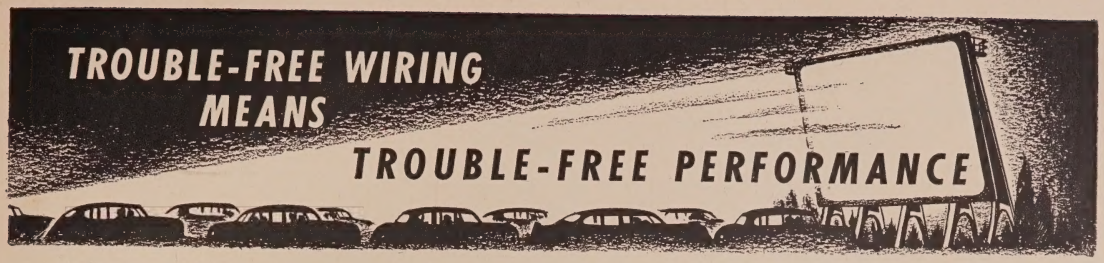

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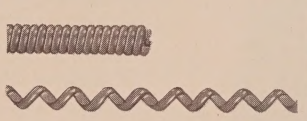

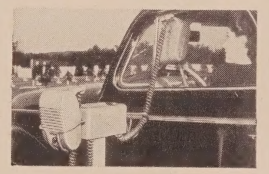

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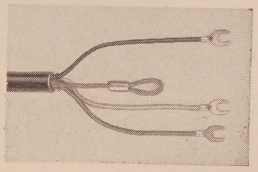

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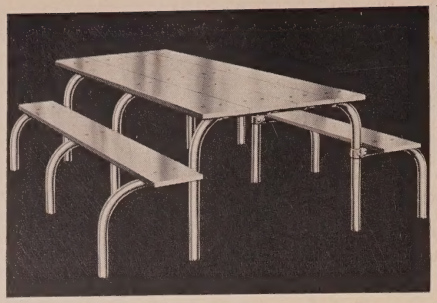

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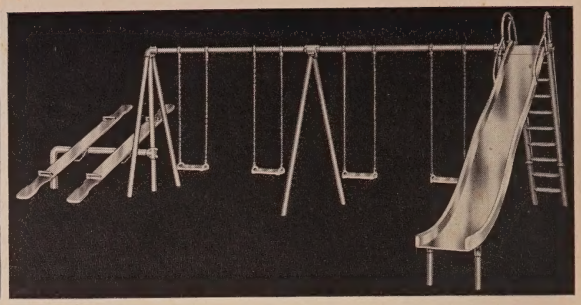

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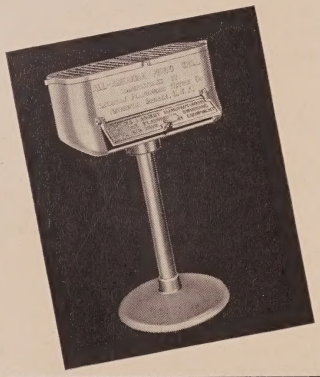

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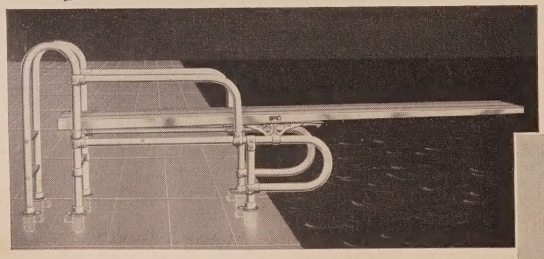

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Front and Lobby

FLOODLIGHTING THE THEATRE FACADE....*H. E. Mahan* 254
A Pointed Discussion of How the Sorely Neglected Exterior May Be Set to Glowing as a Sales Factor

AN EFFICIENT CROWD CONTROL SYSTEM.....*W. H. Lee* 258
Patrons Leaving City Line Center, Philadelphia Exit Through Interior Rather Than Foyer Standees

THE ROLE OF RUBBER MATS IN THEATRES *D. W. Moor, Jr.* 260
Several Types of These Protective Floor Coverings Are Studied With Regard to Their Functional Worth

Interior and Auditorium

SELECTING UPHOLSTERY FABRICS FOR CHAIRS *Marinus Westrate* 276
Criteria Used in Choosing Materials and Tests Performed to Determine Fulfillment Are Studied

PUBLIC SERVICE OF THE WATER COOLER *Francis E. Moquin* 280
An Indispensable Aid in the Creation of Goodwill Is Considered From a Sound Functional Viewpoint

STRUCTURAL CONSIDERATIONS FOR THEATRE PLUMBING 283
Installation of the Following Facilities Should Conform with Codes and Standard Practices

POINTERS TO INSURE LONG CARPET WEAR *Merrill A. Watson* 285
Construction, Underlining, and Installation Are Treated in Their Close Relationship to Use Life

Projection and Sound

CHOOSING THE PROPER TYPE AND SIZE ARC *W. W. Lozier and E. R. Geib* 318
Recent Developments in the Science of Projection Are Analysed With an Eye to Specific Applications

CINERAMA: A NEW ERA IN FILM ENTERTAINMENT?... 321
Dramatic Process Brings True Reality to Screens With Three-Dimensional Picture and Sound System

Heating, Ventilating and Air Conditioning

EVAPORATIVE COOLING FOR THEATRES 346
A Simple and Inexpensive Air Conditioning Method Proves Suitable for Operation in Many Localities

PREVENTING CORROSION IN AIR-CONDITIONING SYSTEM .....*W. J. Ryan* 351
Chemical Compounds for Warding Off or Reducing Destructive Formations Are Helpfully Analysed

MAINTENANCE OF THE AIR-CONDITIONING PLANT 353
Practical Tips on Good Housekeeping for Trouble-Free Operation and Maximum Equipment Life

New Products, Supplies, and Supply Dealers

NEW INTRODUCTIONS DURING 1950 360
Brief Thumbnail Descriptions of Selected Products With Interesting Possibilities

SUPPLY DEALERS OF THE UNITED STATES 367
Comprehensive Listing of Names, Addresses, Personnel, Products, and the Areas Served

SUPPLY DEALERS OF THE DOMINION OF CANADA 380
Comprehensive Listing of Names, Addresses, Personnel, Products, and the Areas Served

SUPPLY DEALERS OF THE REST OF THE WORLD 382
Comprehensive Listing of Names, Addresses, Personnel, Products, and the Areas Served

REVIEW OF PAINTS, VARNISHES, AND LACQUERS 391
Resume of Properties and Uses of Coatings; Special Materials and Future Possibilities

Advertising:

A

ADLER SILHOUETTE LETTER CO. 270, 271
AMERICAN BLOWER CORP. 354, 355
AMERICAN MAT CORP. 274
AMERICAN SEATING CO. 310
ASHCRAFT, C. S. MANUFACTURING CO. 339

B

BALDOR ELECTRIC CO. 333
BAUSCH AND LOMB OPTICAL CO. 341
BEVELITE 272

C

CENTURY PROJECTOR CORP. 328, 329
CLANCY, J. R., INC. 289

BOOK TWO:
Equipment

D

DAYTON SAFETY LADDER CO. 407

E

ELECTRIC-AIRE ENGINEERING CORP. 408
EXELITE 340
EXHIBITOR 316

F

FEDERAL ELECTRIC PRODUCTS CO. 298
FRANKEL ASSOCIATES 292

G

GENERAL ELECTRIC CO. (LAMP DIV.) 409
GENERAL ELECTRIC CO. (VACUUM CLEANER) 308
GENERAL RADIO CO. 297
GENERAL REGISTER CORP. 406
GOLDBERG BROTHERS 410
GOLDE MANUFACTURING CO. 411

H

HERTNER ELECTRIC CO., THE 334
HEWITT-ROBBINS, INC. (HEWITT RUBBER DIV.) 314
HEYWOOD WAKEFIELD CO. (THEATRE SEATING DIV.) 311

I

IDEAL SEATING CO. 312
INTERNATIONAL PROJECTOR CORP. 330, 331

K

KARAGHEUSIAN, A AND M, INC. 307
KLIEGL BROTHERS 315
KNOXVILLE SCENIC STUDIOS 293
KOLLMORGEN OPTICAL CORP. 342
KROEHLER MANUFACTURING CO. 313

L

LORRAINE CARBONS, INC. 344

M

MAHARAM FABRICS 294
MCAULEY, J. E., MANUFACTURING CO. 338
MITCHELL, HUBERT, INDUSTRIES, INC. 295
MOHAWK CARPET MILLS, INC. 304, 305
MOTIOGRAPH, INC. 325, 326, 327

N

NATIONAL CARBON CO., INC. 343
NATIONAL SUPER SERVICE CO., INC. 309
NATIONAL THEATRE SUPPLY 272, 324, 330, 331, 334, 340, 354, 355
NATIONAL THEATRE SUPPLY EXPORT 385
NOVELTY SCENIC STUDIOS, INC. 290, 291

O

ONAN, D. W. AND SONS, INC. 302

P

PARAMOUNT DECORATING CO. 296
PEREY TURNSTILE CO., THE 269

R

RADIO CORP. OF AMERICA (RCA INTERNATIONAL DIV.) 387
REVERSIBLE COLLAR CO. 412
ROBIN, J. E., INC. 335

S

SMITH, ALEXANDER & SONS CARPET CO. 306
SPONGE RUBBER PRODUCTS CO. 303
STRONG ELECTRIC CORP., THE 336, 337
SUPERIOR ELECTRIC CO., THE 300

T

THEATRE CATALOG 358
TRUMBULL ELECTRIC MANUFACTURING CO. 299

U

UNITED STATES AIR CONDITIONING CORP. 357
UNIVERSAL CORP. 273

W

WAGNER SIGN SERVICE, INC. 263, 264, 265, 266, 267, 268
WALKER SCREEN CO. 324
WARD LEONARD ELECTRIC CO. 301
WENZEL PROJECTOR CO. 332
WESTREX CORP. 389

FRONT *and* LOBBY

1950-51

Floodlighting the Theatre Facade

A Pointed Discussion of How the Sorely Neglected Exterior May Be Set to Glowing as a Sales Factor

By H. E. Mahan
Manager, Illuminating Laboratory
Apparatus Department, General Electric Company

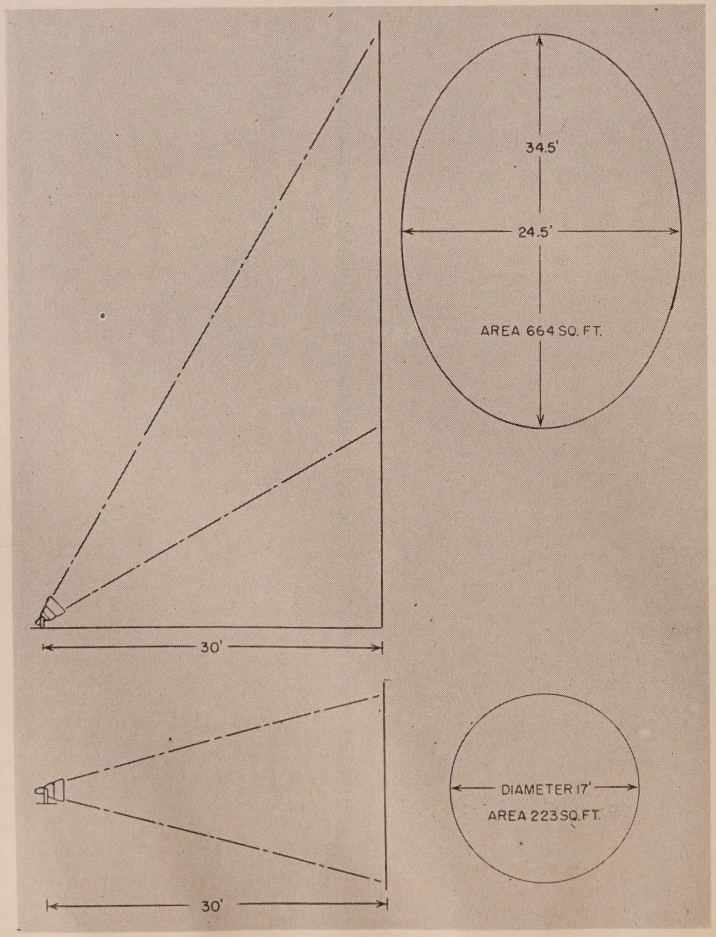
Light has long played an important role in the theatre, and its versatile dramatic qualities have been used in lobbies, foyers, lounges, auditoriums, and on stages to create desired decorative and psychological effects. Curiously enough, however, in spite of its full recognition of the outstanding dramatic results which may be achieved by the use of effective lighting throughout the interior of the motion picture house, management often fails to appreciate the fact that forceful lighting may also be employed to glamourize the exterior of a theatre building in ways that are sure to attract the attention of potential patrons.

Exterior Floodlighting Assets

This frequent neglect on the part of theatre operators to capitalize on the benefits to be derived from effective lighting of the exteriors of their houses, as well as the interiors, is all the more difficult to understand when one realizes that these same operators often possess theatres with gorgeous fronts highlighted by elaborate flutings, cornices, scallops, and other types of eye-catching design features. The ironic fact is that these architectural values are often entirely wasted on the night-time audience (far larger than the matinee one) because they are either completely obscured in darkness or only faintly visible. Unfortunately, this failure to call attention to the theatre facade has been given added impetus by a somewhat misguided inclination on the part of many operators to dispose of upright signs completely in favor of mere simple overhanging marquees.

Many existing theatre facades lend themselves admirably to floodlighting and, by the use of such devices as shadows and color, become even more interesting at night than during the daytime. The obvious reasons for this enhanced appeal lie in the fact that the architectural elements may be readily emphasized by highlights or silhouettes, and the entire structure may be made to stand out in vivid contrast to surrounding buildings. In addition to glamourizing the building as a whole, a properly floodlighted facade can be one of the biggest selling points of the theatre.

PATTERN of a floodlight beam projected on a vertical surface, changes with the angle of direction. Removed 30 feet and in direct line (below) the circular illumination is only 17 feet in diameter; but, tilted upwards (above) and still in an effective range, it can illuminate three times the area.



BRIEF: *Lighting . . . in all of its appealing forms . . . has for some time enjoyed widespread favor . . . among theatre designers and operators . . . as an incomparable medium for setting expressions of mood throughout playhouses . . . in addition to its directional and safety functions . . . In nearly every modern theatre one encounters new . . . and unusual . . . adaptations of light to a seemingly endless variety of purposes.*

By some curious paradox . . . however . . . many theatremen have apparently never given much thought to the fact that light may also be used to attain striking dramatic effects on the exteriors . . . as well as in the interiors . . . of their houses . . . Apparently lacking either the knowledge . . . or the sense . . . to floodlight them properly, a number of exhibitors have sadly overlooked the selling potentialities of an effectively illuminated facade.

The following article outlines the problems involved in floodlighting a theatre facade . . . and suggests logical approaches to their solutions . . . Covered are such topics as: the advantages of exterior floodlighting . . . the separate considerations of both old and new theatres . . . the artistic concepts involved . . . environment and facing materials . . . selection and placement of lamps . . . the use of color . . . and cost estimates.

The Existing Theatre

When facades on existing buildings are considered for illumination, it is sometimes difficult to find physical space for the floodlights and practical means of getting electrical service to these locations. In most cases, however, these difficulties may be overcome without major changes in the structure. As a general rule, the roof of the marquee, which commonly forms a part of the theatre entrance, is a practical location for the equipment required for the general floodlighting of the facade. Setbacks, niches, cornices, etc., frequently can be used to conceal the floodlights necessary to emphasize architectural features. Furthermore, ornamental standards along the curb may generally be used to support floodlights without detracting from the overall appearance of the building.

The New Theatre

The new theatre building offers the greatest opportunity for creating an architecture whose dramatic qualities may be set off at night by the beautiful and magnetic effects which only light can produce. The possibilities in this field are limited only by the imagination and ingenuity of the architect and engineer collaborating in the planning stage of the building. Plans must be made to conceal the floodlighting equipment and to locate it where the direction of the light and the light pattern provide the desired effects. Provisions for wiring and convenient servicing must be anticipated.

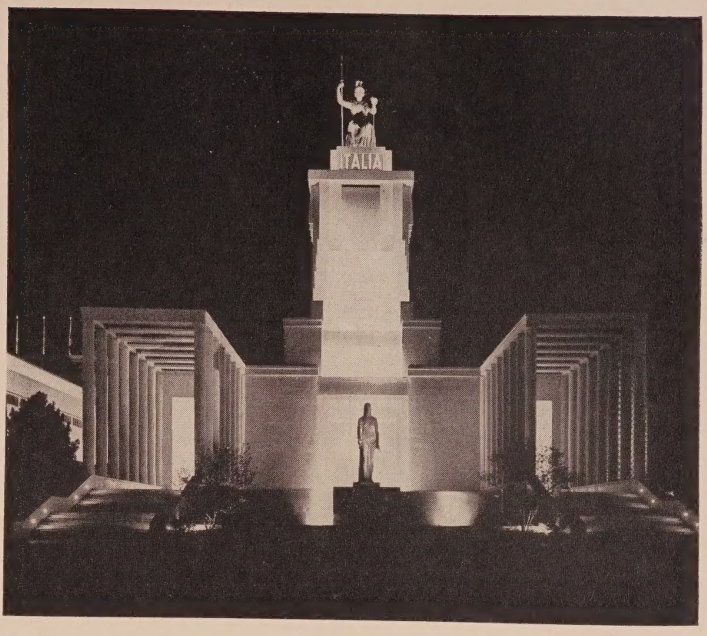
Unfortunately, the question of exterior lighting comes frequently only as an after-thought, and the problem of providing appropriate illumination becomes a complex one, instead of the relatively simple procedure of planning for the installation of the required equipment in the initial design of the building.

Artistic Approach Needed

The success with which light may be applied to building exteriors to obtain striking and interesting aesthetic effects is best illustrated by the expositions of the past half-century. The architects designed these structures with lighting in mind. They selected facing materials only after due consideration of their light-reflecting characteristics, and adequate provisions were made for locating, concealing, and servicing the equipment. This forethought resulted in building of fascinating night-time beauty.

The floodlighting of a building in its broader sense falls within the realm of the *art* of illumination, rather than the *science* of illumination. As far as the former is concerned, the end result is an effect that one endeavors to accomplish by means of highlights and shadows, direction of light, static or changing color, etc. Obviously, the *science* of illumination, which concerns itself with the computation of quantity, efficiency, utilizations, etc., plays a less important role in achieving these results.

The creation of artistic lighting effects, therefore, requires imagination and originality to the same degree that an artist uses these qualities in painting a picture. The only real difference is that the medium in one case is light, and pigments in the other. Due to this basic kinship to the individuality of artistic



DRAMATIC ACCENT ON ARCHITECTURAL LINES was the dominant motif at the New York World's Fair in 1939 and 1940. Here illustrated is the Italian Court Building where a floodlighted central waterfall combined with classic figures and columns to produce a night time effect of great splendor.

method, and, since theatres vary widely in structural style, it is not feasible to formulate floodlighting practices applicable to all cases. There are, however, certain fundamental principles which should be followed to insure satisfactory results.

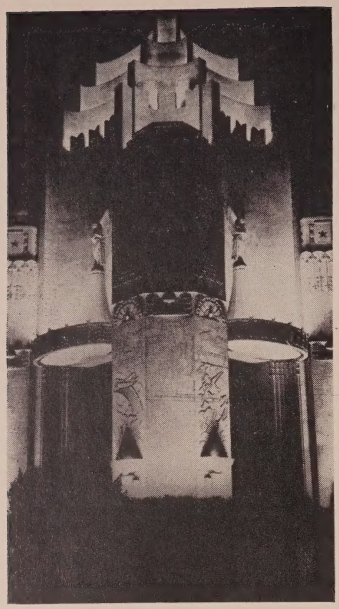
Environs and Facing Materials

Since the primary purpose in floodlighting a theatre facade is to emphasize its salient architectural features, first consideration must be given to its surroundings in order to determine the required level of illumination necessary to realize the desired contrast with neighboring buildings. For example, a theatre facing a well-lighted street and surrounded by electric signs and brightly lighted show windows will obviously require a higher level of floodlighting than one located in a park relatively free of extraneous light. Similarly, a playhouse faced with red brick or dark-colored stone will require a higher level than one faced with light-colored

Table I—Floodlighting Considerations and Precepts

Building Surfaces	*Reflection Factors*	*Recommended Footcandle Levels*			*Recommended Watts Per Square Foot*		
		A	B	C	A	B	C
White Terra Cotta Cream Terra Cotta Light Marble	60-80%	15	10	5	2.25	1.5	0.75
Light-gray Limestone Bedford Limestone Buff Limestone Smooth Buff-face Brick	40-60%	20	12	7	3.0	1.8	1.05
Briar-hill Sandstone Smooth-gray Brick Medium-gray Limestone Common Tan Brick	20-40%	25	15	10	3.75	2.25	1.5
Dark Field-gray Brick Common Red Brick Brownstone	10-20%	30	18	12	4.5	2.7	1.8

A. Buildings on "white ways"; intensive street lighting; streets with many conflicting signs and light sources; and lower portions of buildings falling under Class B locations.
B. Medium-intensity "white ways"; secondary business streets with few conflicting signs, etc.
C. Very little conflicting light, such as residential streets, parks, lighted highways, etc.



EXPOSITION BUILDINGS. The Palace of Mines, Metals and Machinery (above) at the 1939 Golden Gate International Exposition. Entrance pylons (below) at the Great Lakes Exposition of 1936.

material. These environmental and facing material factors are given consideration in Table I showing recommended levels.

It is extremely important, when considering a material for use on a theatre facade, to know the nature of its surface. A rough surface diffuses reflected light, while a smooth one reflects its specularly. Circumstances usually require that the light be directed upward from floodlights placed below the area to be lighted. If the surface is smooth or specular, the reflected light goes skyward, and the facade appears dark to the observer on the street. On the other hand, if the surface is rough and the light is diffused, the area appears bright from all viewing positions. It is, therefore, advantageous to select a facing material that has a matte surface or one that has been roughened by appropriate tooling.

Selection and Placement

The selection and placing of floodlights is important and deserves careful study. Floodlights are available in sizes to accommodate 100 watts to 1500 watts and in beam spreads from approximately 10° to 100°. Due to reasons of economy, it is advisable to use as large a wattage unit as is consistent with the requirements, but the actual choice is much more complex than this would indicate, for it envolves a study of the surface coverage and the required illumination intensity.

The foregoing point is illustrated by the chart shown in Fig. 1, where a 30° beam is projected, first, perpendicular to the surface to be lighted and, secondly, at an angle with a vertical surface. The pattern on the surface, when the floodlight beam is directed perpendicular to it, is a circle 17′ in diameter, whereas the same beam directed at an angle to the surface is an ellipse with a minimum diameter of 24.5′ and a maximum diameter of 34.5′. The area of the circle is 223 square feet, and the area of the ellipse is 664 square feet. Since a footcandle is one lumen per square foot, the average number of footcandles on the surface can be determined by the following formula:

$$\text{Footcandles}^{1} = \frac{\text{Beam Lumens}^{2}}{\text{Area of Pattern}}$$

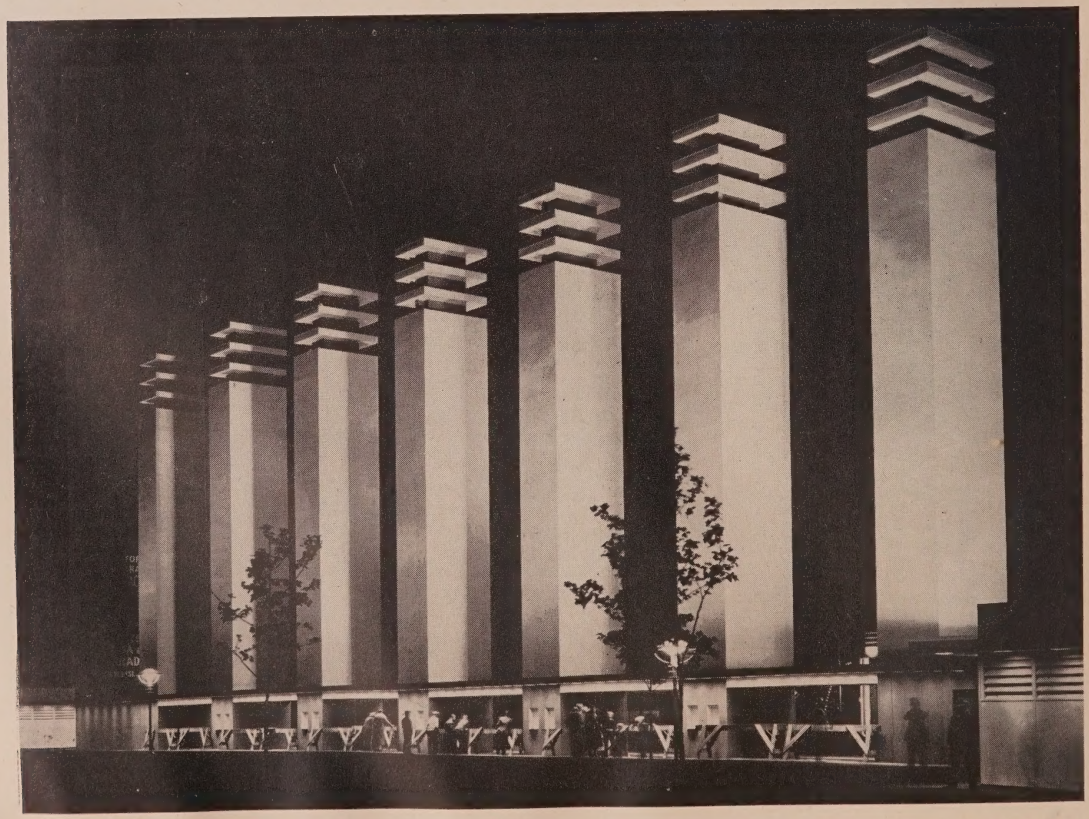
If it is assumed that the floodlight is delivering 4,000 beam lumens, the average number of footcandles over the circular pattern is:

$$\frac{4{,}000}{223} = 18 \text{ Fcs. (approx.)}$$

and over the elliptical pattern is:

$$\frac{4{,}000}{664} = 6 \text{ Fcs. (approx.)}$$

In the event that, under the prevailing relative positions of the floodlights and the surface to be illuminated, a larger pattern of light is required, the obvious solution lies in the use of a wider beam unit; and, similarly, if a higher or lower level of illumination is required, a larger or smaller wattage floodlight is



the answer. This simple illustration indicates the general procedure followed to determine the size and characteristics of the floodlight needed to satisfy the conditions at hand. In general, it is advisable to build up the required illumination by overlapping beams, so that, a dark spot is not created if a lamp outage should occur.

The Use of Color

When skillfully handled, color may to used to glamourize the night-time appearance of a building quite effectively. For example, blue light provides relief lighting or illuminated shadows; green light suggests coolness; red light simulates warmth, etc. Color must be coordinated with the architectural motifs and may be made changeable if appropriate. Mobile color and variation in intensity by dimming create alluring effects whose possibilities have only been touched upon.

In order to obtain colored light from floodlights using filament lamps, colored door glasses are used which absorb that part of the spectrum other than the color desired. The colored light thus transmitted is in the order of 50% for amber, 20% for red, 10% for green, and 5% for blue; it is, therefore, necessary to compensate for these lower light outputs, if the resulting illumination is to be comparable to that obtained with clear light. As a rule, if colored light is provided in these relative wattage values as compared to clear light, the results will be satisfactory: Amber 1.5; red 2; green 4; and blue 6.

Calculation of Cost

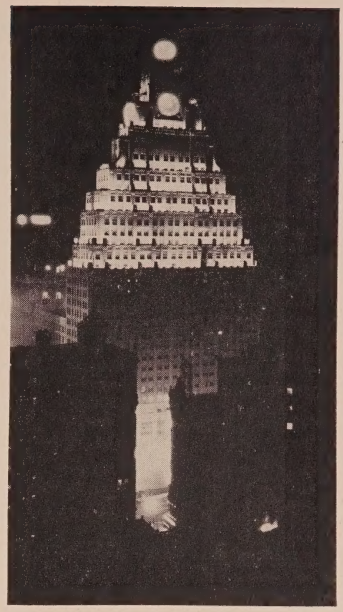
It is hazardous to estimate the cost of floodlighting a theatre facade without detailed knowledge of its construction and the opportunity it presents for floodlighting. However, since cost is always an important consideration, an example to indicate the magnitude of the initial investment and operating expense may not be too far afield from a typical case.

If we assume that a facade has a 100-foot frontage, is 50′ in height, is faced with light gray limestone, and fronts on a well-lighted business street, the connected load required to provide an illumination of 20 footcandles is approximately 15 kilowatts. The hours of operation will probably average 2,000 hours per year which, with power at $.02 per kilowatt hour, would show an annual power cost of $600, or $.30 per hour. While it is true that the initial cost of such an installation will vary widely in individual cases, it would, under favorable conditions, probably run in the neighborhood of $2,500, or $.50 per square foot of facade.

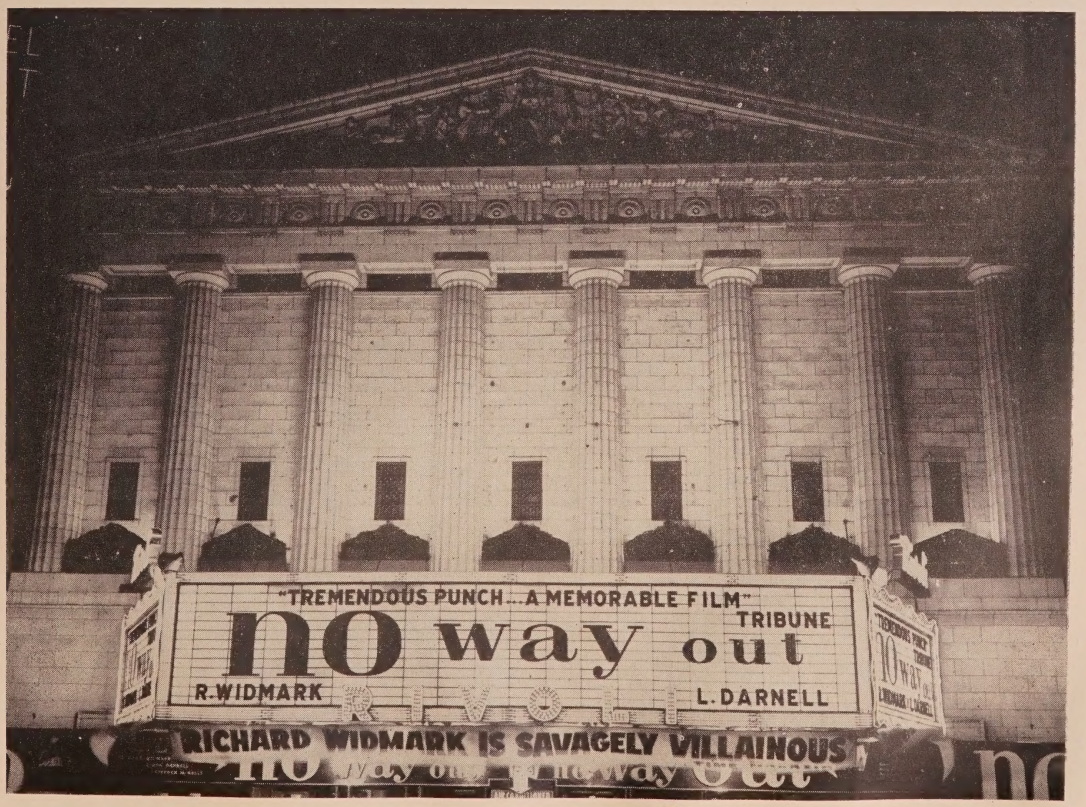
REFERENCES

(1) Footcandle is the unit of illumination when the foot is the unit of length. It is the illumination on a surface one square foot in area on which is uniformly a flux of one lumen and equals lumens per square foot.

(2) The lumen is the unit of luminous flux. It equals the flux emitted through a unit solid angle (one steradian) from a point source of one candle.



THEATRE BUILDINGS. The Paramount Theatre and Office Building (above) caps the brilliance of New York's Times Square. The swank Rivoli Theatre, New York, displays its classic facade.



An Efficient Crowd Control System

Patrons Leaving City Line Center, Philadelphia, Exit Through Interior Rather Than Foyer Standees

By W. H. Lee
Architect

BRIEF: ***One of the outstanding features of Philadelphia's new City Line Center Theatre (pictorially reviewed on pp. 86-89 of the 1949-50 edition of THEATRE CATALOG) . . . hub of an ultra-modern suburban shopping center . . . is its ingenious crowd control system.***

Here is a terse description of the plan . . . put into effect by Architect W. H. Lee . . . to clear the house rapidly . . . and to stop the annoyance caused patrons watching the show by chatting standees . . . A simple installation of a "foyer wall" solves the problem neatly.

In recent years, theatre designing has shown considerable improvement in certain phases having to do with patron comfort, such as wider spacing of chairs from back to back, improved air conditioning systems and acoustical treatments, better projection and sound systems. The plan layout, however, which controls circulation when the theatre is crowded, has shown little change or improvement. The standees are subjected to the indignity of being herded into "bull pens" behind ropes in order to create passage for the exitees. The patrons in the last four or five rows of seats are annoyed by the chatter of the standees, and the clearing of the house is slowed up, thus prolonging the confusion.

The City Line Center Plan

At the City Line Center in Philadelphia these conditions were corrected by the construction of a wall between the standee space and the auditorium which is termed the "foyer wall." There are doors at the aisle heads. The last row of seats is placed five feet away from the foyer wall to provide a cross-over leading to exit doors at each side of the theatre. This permits all normal exiting to take place inside the auditorium and not through the standees in the foyer.

At one end of this rear cross-over, two sets of exit doors are provided opening directly into the lobby, thus affording the opportunity for all patrons to follow their natural inclination to leave the theatre rapidly by way of the entrance lobby. Under these conditions the standees are free to move about in the foyer. There are glass panels in the wall which permit a view of the picture with the sound being supplied by several speakers concealed in the foyer walls. As no standing is permitted on the rear cross-over, the patrons in the rear seats enjoy the same freedom from extraneous distractions as those in the rest of the auditorium.

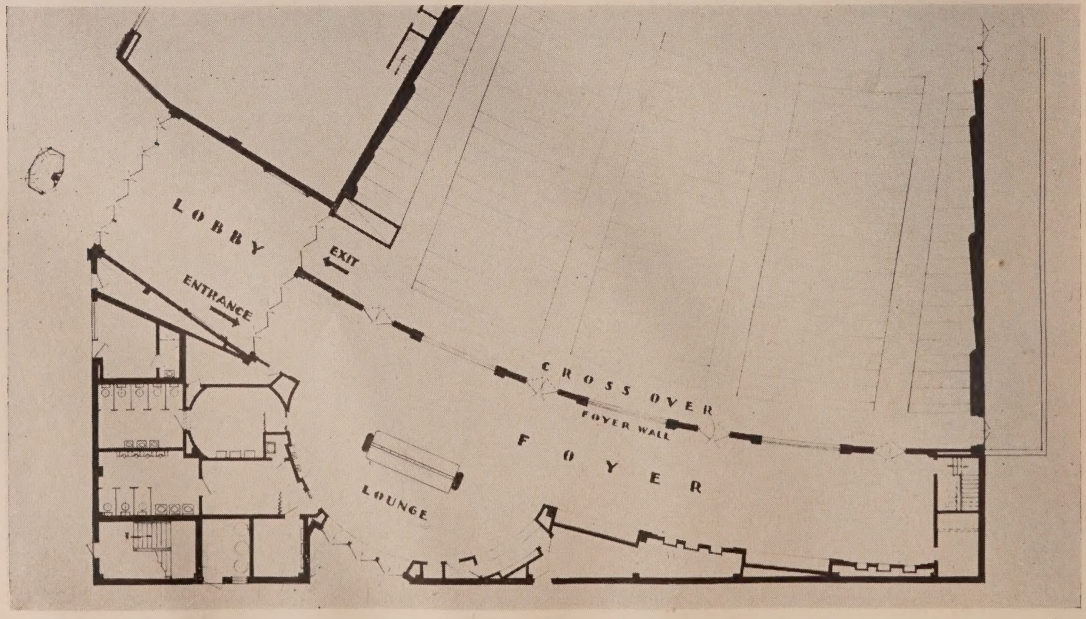
After over a year of operation, the management is still enthusiastic about the short time it takes to clear the house and the quiet, dignified atmosphere it is possible to maintain, even under the most crowded conditions.

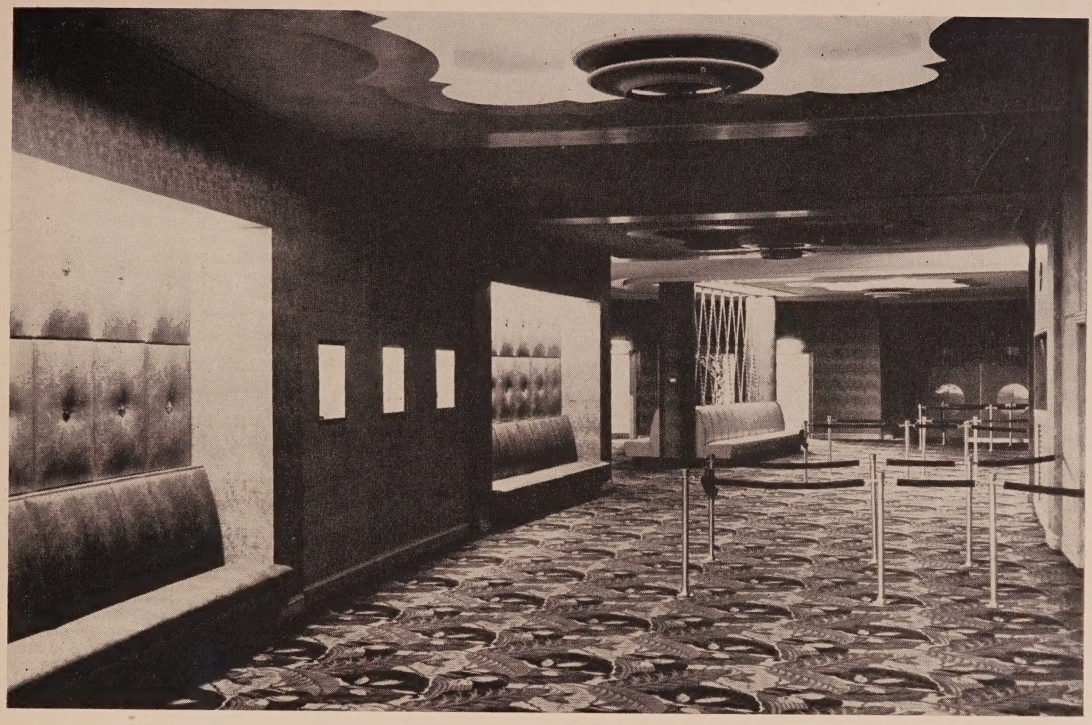
Closed Foyer Wall Scheme

The accompanying diagrammatic sketch clearly shows the closed foyer wall plan. While the position of the entrance lobby in the City Line Center was ideally located for exiting from the rear cross-over, the general idea of the scheme can be applied, at least in modified form, to most theatre plans by providing a set of doors in the foyer wall as near as possible to the entrance lobby for exiting purposes.

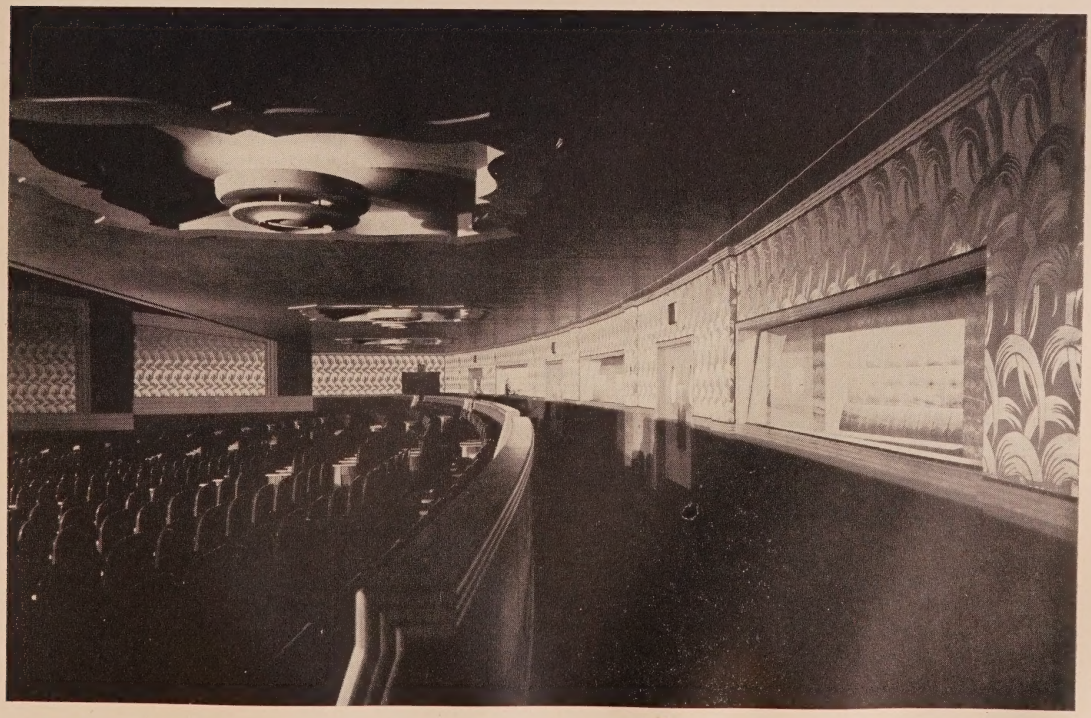
Even though this exit arrangement in some instances could not be accomplished, the closed foyer wall can be used under any conditions, and this feature alone is a great contribution to the enjoyment of the show by patrons in the rear of the auditorium.

AN INTERESTING PLOT PLAN shows the manner in which the five banks of entrance-exit doors are actually split to serve two separate and distinct passages. Through this method, waiting standees remain outside of the auditorium confines until all exiting patrons have completed their egress.





TWO SEPARATE AREAS for entrance and for exit are connected only by solid doors in their glass partition wall. The entrance foyer and lounge (above) is ornately luxurious, and provides a separate lighted room where waiting standees can rest and chat awaiting the show break. The normal standee rail (below) is not used for that purpose, but marks one side of the exiting area through which patrons pass directly to the lobby.



The Role of Rubber Mats in Theatres

Several Types of These Protective Floor Coverings Are Studied With Regard to Their Functional Worth

By D. W. Moor, Jr.
President, American Mat Corporation

BRIEF: *A doormat . . . usually placed directly in front of the threshold . . . is a traditional fixture on the porches of American dwellings . . . Every home owner knows how his rugs can suffer from muck trampled in from the outside . . . so he wisely provides a handy mat on which feet may be wiped conveniently.*

The theatre operator likewise must protect his costly carpets . . . against the punishment inflicted on them by the filth tracked in constantly on the shoes of patrons . . . Rubber mats which trap dirt and water . . . in the transition areas between outside and inside . . . are extremely effective for this purpose . . . They may also be used to good advantage in heavy traffic areas inside the theatre . . . Aside from their protective merits, mats are also useful in decorative . . . safety . . . and traffic directional respects.

Discussed in the following article are: the multiple applications of mats . . . the various types . . . installation . . . and maintenance.

The problem of how to reduce operating costs without lowering the quality of his physical facilities is one which has confronted every theatreman from the earliest days of film business. Since the expense of upkeep is one of the biggest items in the exhibitor's operating budget, it is obvious that any measures which can be taken to hold down this figure will make the overhead dollar stretch further. Of course, these expedients must not detract from the general attractiveness or functional efficiency of the house.

First among the practical solutions to the problem of obtaining lowered costs, without sacrificing the quality of a theatre's appointments, stand rubber mats. Durable, safe, and eye-appealing, this type of floor and stair covering is an ideal answer to the question of how economical, yet efficient, theatre operation may be effected.

MULTIPLE APPLICATIONS

One of the cardinal reasons why rubber mats occupy a front position in the rank of aids to less expensive and smoother film house management lies in their unique versatility. Although they are particularly valuable in the field of maintenance, the advantages of rubber mats are by no means restricted to this sphere alone.

Decorative Effects

There is no reason why rubber mats in a theatre need be purely functional without a touch of the esthetic, for it is possible to have them inlaid with a wide variety of decorative patterns. For example, mats have been made with palm trees worked into them for use in Florida, some laid in New England theatres feature mountain scenes, and the cost of putting the name of any house into any rubber mat is quite nominal.

One of the most practical uses of decorative treatments in mats is, of course, traffic direction. Through a series of arrows or other directional indicators entering or exiting patrons may be led right from the sidewalk into the theatre and out again.

Accident Prevention

Since one fall by a patron on a slippery floor can be ruinous to a theatre from a financial point of view and result in the loss of valuable goodwill (even if insurance coverage is carried), many rubber mats are purchased for safety reasons, especially where they are used on concrete or terrazzo floors that have a downward slope. The safeguard which they provide against slipping hazards in wet or sloppy weather is alone worth many times the purchase price.

By the same token, rubber treads and nosings may be used on stairs to guard against serious falls at these well-known danger spots. White rubber is particularly recommended for stair tread nosings used in conjunction with carpeting in balcony areas because of its greater visibility; steps to lounge rooms do not necessarily require a white nosing as light is usually more plentiful here.

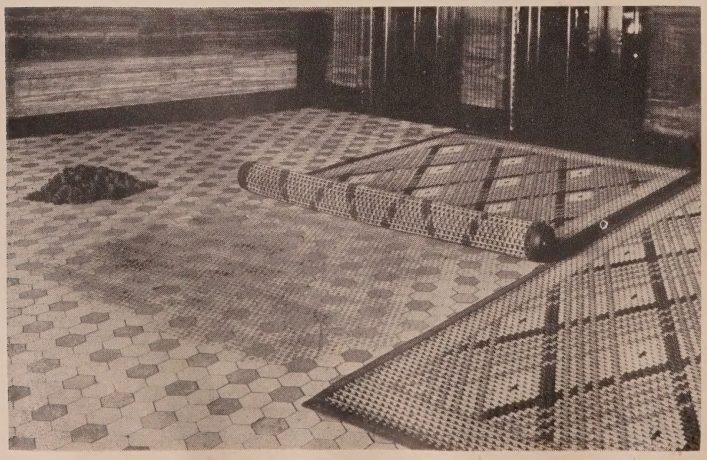
Protective Housekeeping Aid

When all is said and done, however, rubber mats find their most important use in the protection of the theatre against the ravages of foreign matter brought in from the outside. Dirt, sand, mud, water, and tar are constantly being tracked into the theatre by patrons, and the first two are blown in whenever the doors are opened. This destructive material must be trapped and kept outside the main part of the theatre insofar as possible, for, if it is permitted to get inside, it will be ground into expensive carpeting and oftentimes blown into the air by heating and ventilating systems to settle on walls, furnishings, and equipment.

The ability of correct mats to scrape the dust, dirt, wet, and other filth from the feet of incoming patrons, thereby safeguarding against heavy abrasive wear, is particularly noteworthy in the case of carpets. Many theatre operators have found to their dismay that a frightful mess can be made of their carpets during bad weather without adequate mat protection, but, on the other hand, exhaustive studies have shown that the dry, hard particles carried in during the best of weather can inflict equally terrible damage on carpeting. These fine bits of dirt literally cut the nap of the carpet to shreds and slash the life of even the finest carpets in half. It should be noted that even the most up-to-date carpet cleaning equipment will not remove these grit particles thoroughly.

Since dirt which does not get into carpets cannot damage them, a proper

A GRAPHIC THEATRE EXAMPLE of the value of rubber lobby mats is this unposed view taken in a busy theatre. One third of the matting is rolled down in operating position, trapping the dirt out of sight and beyond possibility of being blown or tracked into the carpets and aisles. One third is rolled back to show how the dirt passes through the holes. The last third has been removed and the dirt swept into a concentrated pile in order to realize its volume.



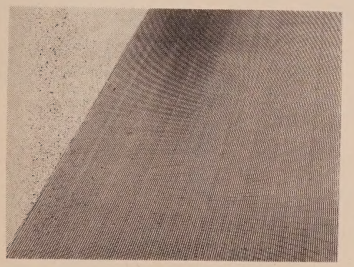
matting installation goes a long way toward reducing the staggering costs of frequent carpet cleaning and replacement. Furthermore, the use of rubber mats to trap harmful dirt is by no means restricted to the entrance or lobby. Inexpensive, corded rubber runners in color have been developed which may be used to protect carpeting in such heavy traffic areas as those around refreshment stands. In this particular connection, they retain spilled drinks, candy, popcorn, ice cream, etc., in grooves below the level of the foot and keep them from flowing out onto the carpet.

TYPES OF MATS

There are perhaps more than 50 different types of rubber mats on the market today. Many of these are made from tire fabric, others are of a colored rubber link type, and the remainder mostly fall into the simple perforated, corrugated, and corrugated - perforated categories.

Perforated

This type of mat is manufactured with a smooth top surface in which there are perforations. Although they can be made in various patterns, perforated mats have little value in the theatre field because their dirt-removing and non-slip properties are practically nil.



CORRUGATED RUNNERS have many uses as floor protectors and have 1/8 inch deep ridges.

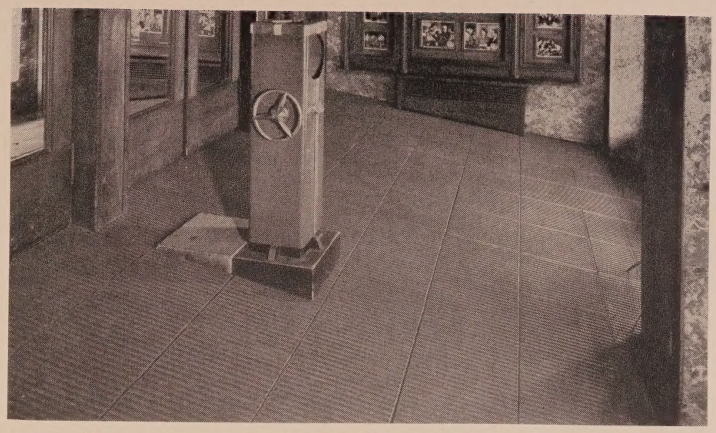
Corrugated

Running in thickness from 1/8" to 3/8" and in rolls up to 50 yards long, corrugated matting provides a fairly safe walkway but is generally classified merely as a floor protector. The ordinary type cannot trap dirt effectively because there are no holes in it.

There are, however, corrugated types of matting with ribs running in different directions which are 1/8" to 1/2" higher than the back surface. These mats will hold some dirt and prevent it from being tracked into the theatre, but they have a big disadvantage in that they can hold only so much dirt and are difficult to clean.

Corrugated-Perforated

Popular with theatres for many years, this type of mat can be made in attractive patterns and has a corrugated surface with perforations through to the bottom. While it removes more dirt from feet than the ordinary corrugated kind, its ability to do so is lessened considerably when the fine corrugations, which are not very high above the bottom surface, wear smooth. At the same time, the safety factor is likewise diminished.



RECENTLY INTRODUCED is a low priced deeply corrugated runner matting that creates a pleasing effect when installed wall-to-wall. Cleaning maintenance with a mop or hose would be very simple.

Link

Among the various types of link mats is the tire fabric variety. Although it is a fairly good product and is quite suitable for use in a factory or institution, it possesses none of the eye appeal necessary in a theatre mat. Made of old tires, it takes a long time to dry out when wet and does not stop water from being tracked into the theatre and onto the carpets.

Another type in the link category, however, the colored rubber kind, is a mat that combines all the good points of the other varieties mentioned but has none of their drawbacks. It has one especially distinctive advantage from the point of view of maintenance in that new links may be easily inserted into worn areas to make the mat as good as new. In the case of solid rubber matting, on the other hand, it is almost impossible to vulcanize a new section into a defective area, so the mat must usually be disposed of in the interests of safety.

INSTALLATION

Corrugated-Perforated

All rubber mats can be made to fit an entire lobby from wall to wall and door to door, but it is more practical, particularly as far as the corrugated-perforated types are concerned, to cut them up into units four to five feet square. The floor should be laid off and brass dividers used between each square.

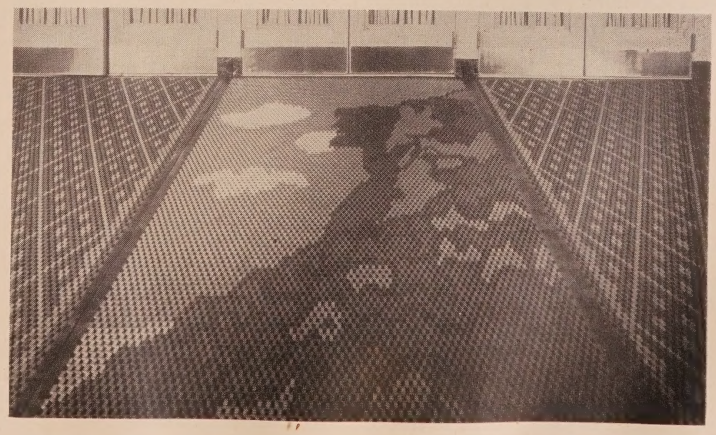
Link

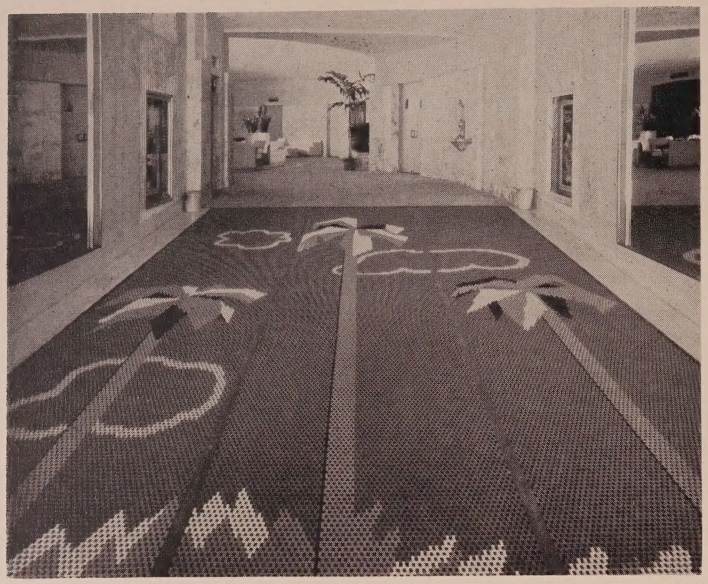
Link type mats can be made in widths and lengths that will distribute the square footage of the lobby area equally. The mats can be easily rolled from the inner doors to the outer doors for cleaning, as it is only necessary to fasten them in position on a severe ramp. Fasteners have been developed which fit between the holes of the links, screw into the floor beneath, and do not protrude above the top surface of the mat.

Stair Nosings

The nosing or lip incorporated in a stair tread made out of rubber should be

COLORS AND DESIGNS are without limit in rubber link matting. Thoroughly anchored on the steep ramp of the Albert Theatre, Berlin, New Hampshire they complement the decoration.





ADVERTISING AND TRAFFIC DIRECTING VALUES are by-products of the rubber link mats that are so popular in theatre lobbies. It is also possible to create illusions of enlarged or minimized dimensions.

thicker than the tread itself. However, if the tread is not rubber alone, but a compound of rubber and cord, it is not necessary to increase this thickness at the curve of the nosing.

Although there are several types of stair tread nosing, the plain rubber type, which extends over the lip and back about an inch on the stair, is one of the most common. When this kind of nosing is used, the carpet can be brought up to the point where an even joint is formed. The carpet is thus protected, for only the nosing receives the wear.

Every theatre operator should remember that it is on the nosing of a stair that his tread or carpet will show the greatest wear. These nosings may be installed by cementing to the stair surface. Of course, if the stair itself is of wood construction, a corded rubber stair tread may be tacked on it.

THE DEEPLY CORRUGATED corded runner previously illustrated can be used for throw purposes to protect carpets in wet weather, as well as in heavy traffic areas where wear will create embarrassment.

MAINTENANCE

In order to insure long life and extended service, rubber mats must be properly cared for and maintained. Since the present emergency may eventually curtail their production, it behooves every theatreman to acquaint himself with the correct ways of preserving his mats. The following suggestions for this purpose are offered in the hope that management and employees will be guided accordingly.

Practices To Be Followed

After all ordinary floor mopping has been done, rubber mats may be scrubbed with a deck or scrub brush using clean, lukewarm water and a mild cleaning compound (no astringent oil base soaps). By all rights, the top surfaces (at least) of theatre mats should be washed a couple of times a week to keep them free of grime. It is always advisable, however, to wash the bottoms of mats at the same time in a similar fashion. Likewise, the area on which the mat lies should be cleaned thoroughly.

All mats should be rinsed and dried thoroughly before they are returned to use. Link types may be rolled up loosely and stood on end to dry, while solid molded mats should be stood on their sides and allowed to drain and dry. A solid mat should never be rolled too tightly, as there is always the danger of cracking it.

Practices To Be Avoided

Sharp objects should never be dragged over any type of mat, and heavy things, such as film cans or cases, should never be thrown on them because cuts and tears will inevitably result.

Mats should never be grabbed at one end (either by hand or a hook) and carelessly dragged out of their positions on the floor, for the resultant weakening will cause them to curl up and present a real traffic hazard to theatre patrons. Possible tearing is also prevented by avoidance of this practice. If it is necessary to move a mat, it is advisable to have two men handle it.

Finally, colored mats should never be exposed to direct sunlight for long periods of time because the colors in the matting are quite liable to fade, even though they are sufficiently color-fast under normal theatre lighting conditions.

CONCLUSION

It should be pointed out, in closing, that any theatre operator contemplating a rubber mat installation would do well to seek the advice of a competent authority on the subject. In addition to firms with trained staffs of men who specialize in solving matting problems, many theatre supply companies have representatives well acquainted with the qualities of the various types of matting available.

The purchase of rubber mats for theatre installation is not at all comparable to buying mats for use outside the front entrances of homes or in automobiles. There are many factors to be considered that the average theatre operator may overlook, so it is best to rely upon the technical knowledge and experience of a matting engineer in making a selection.

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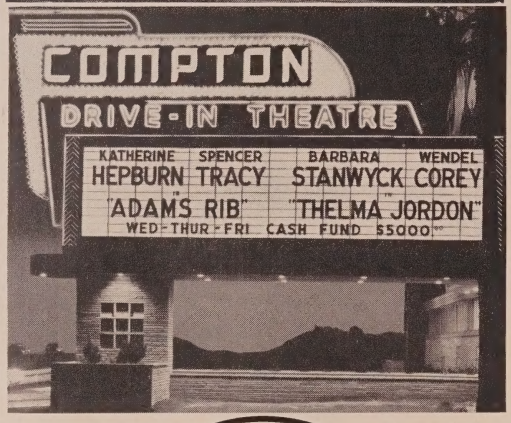

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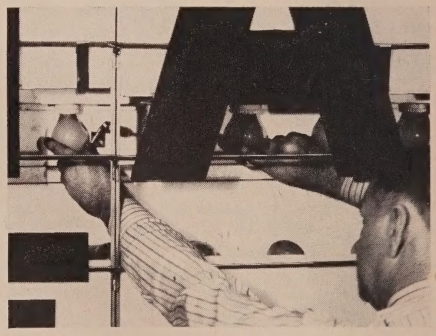

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These frames employ a series of stainless steel bars, spaced on 7" centers, and accommodate any and all sizes of Wagner letters, since these letters are slotted with uniform spacing. (An exclusve patented feature.)

In the "39" type the frame inserts in a channel at top and bottom. It has no drain flange.

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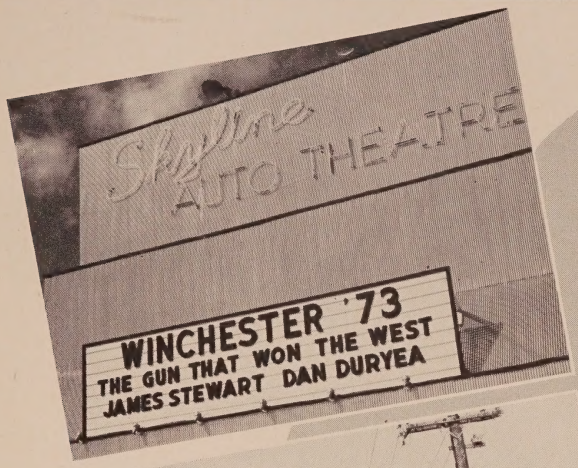

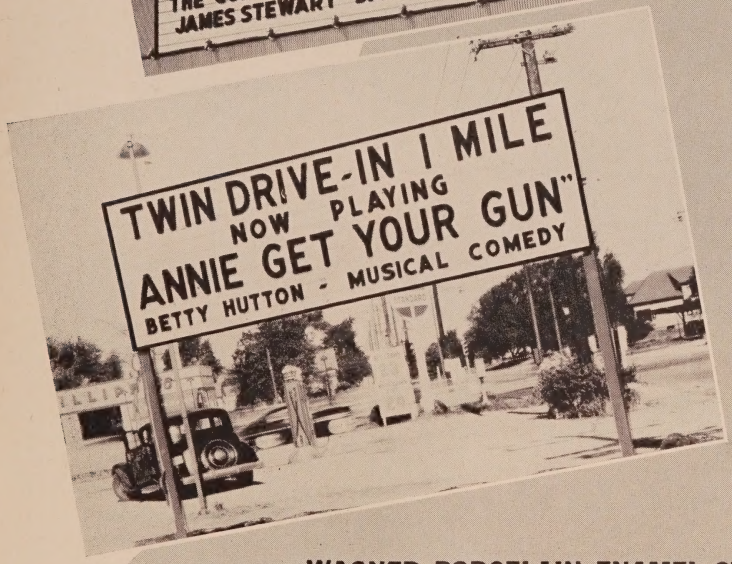

A high quality, low cost changeable copy display for drive-ins. Designed for illumination from the front.

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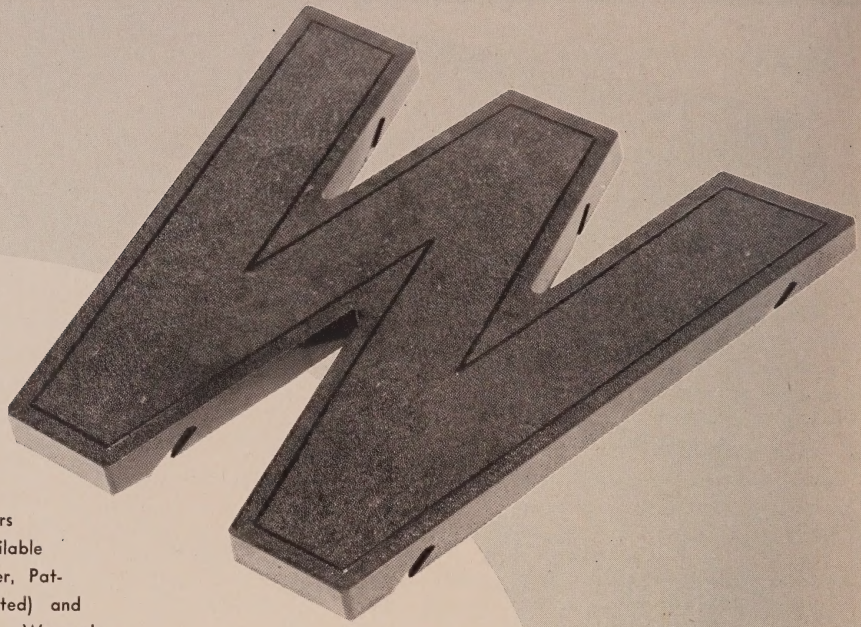

Windproof, slotted letters are patented and available exclusively from Wagner, Patent 2048040 (adjudicated) and many other patents. Wagner's slotted method of mounting prevents freezing to the sign. Letters cannot slide or blow off in the most extreme wind, yet they are the easiest to change of all letters. With more than six times the bearing surface of the lug type letter, Wagner slotted letters assure complete safety. The widest range of sizes and colors. Available in 4", 6", 8", 10" and 17" sizes in red, green, bue, amber and black. Gorgeously brilliant when light shines through them, they also assume sharply silhouetted third dimensional effect by day.

The gorgeous, non-fading, jewel-like colors go all the way through the letters, hence cannot chip or scale. Furthermore, these strong durable letters never require painting or other maintenance. Wagner letters are the only plastic letters that can be stacked for storage without danger of warping.

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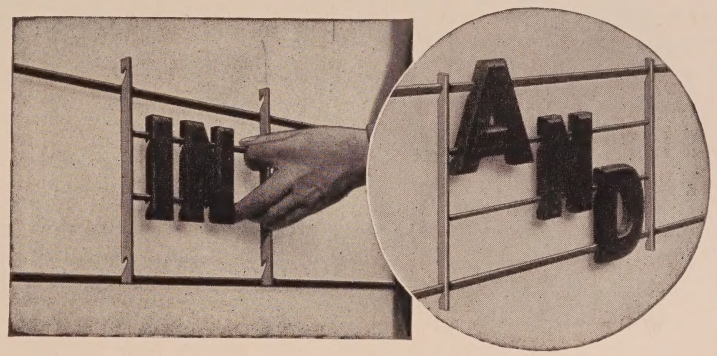

Wagner aluminum letters are available in the widest variety of colors, finishes and styles of type and in more sizes than offered by any other line. Solid color cove letters are made in 4", 8", 10", 12", 16", 24" and 30" sizes. Colored or aluminum cove edge letters are made in 4", 8", 10", 12", 16", 24" and 30" sizes. Gothic letters are made in 6", 8", 10" and 12" sizes, and poster letters are made in 8" and 10" sizes.

Wagner FLEX-WORD FRAMES

These miniature frames mount on standard Wagner frames of 7-inch bar spacing and provide for the easy forming of units of less important words with 4-inch letters. They save space, permit better use of space and make word-plates unnecessary. Flex-Word Units are extremely flexible. The 4-inch letters can be staggered in three lines, or two straight lines can be used in a space that ordinarily accommodates one row of 10" letters. Flex-Word Frames are available for either straight or curved attraction boards. Two or more Flex-Word Frames can be butted together to handle long words.

Wagner Flex-Word Frames are available in horizontal lengths of 8", 12", 16", 20" and 24".

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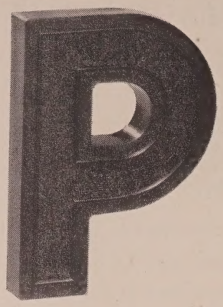
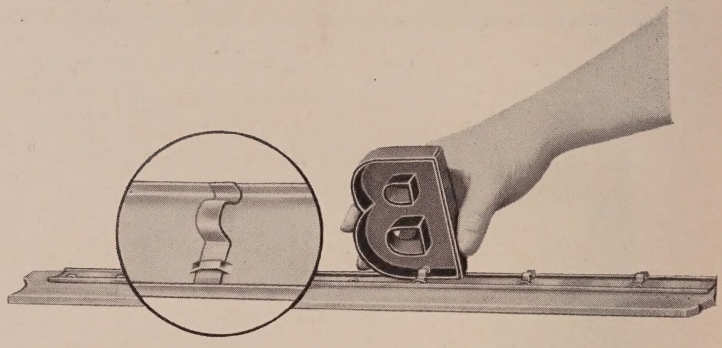


For indoor theatre use. They pick up indirect lighting, appear to be lighted. Jewel-like everlasting colors go all the way through Cannot chip or scale. Shock-proof. 4", 6", 8", 10" and 17" sizes in red, blue, green, amber and black.



Wagner Transparent Plastic Colored Letters are easily adaptable to any arrangement or conditions within the theatre by using stainless steel mounting strips designed for this flexible use.

These letters occupy such small space that they can be set up on ledges, and many other places where no other display equipment could possibly be used. No special wiring is necessary and no alterations are required.

Drilled for mounting with nails or screws onto any cove, sill or other wood foundation, these mounting strips can be placed on top of a wood surface and the letters mounted in the "standee" position, or the strips can be fastened on the under side of a wood surface and the letters used in suspended position.

In determining the lengths of mounting strip needed for any number of letters, estimate as follows: for 4-inch letters, allow 4 inches of space on the mounting strip for each letter, which permits proper spacing. Allow 4 inches of space between words. For 10-inch letters, allow 10 inches of space on the strip for each letter, and 10 inches of space between words.

Mounting strips come complete, including necessary attached clips for holding letters in position, drilled and ready for installation.

WAGNER LUMINOUS COLOR-LITE PLASTIC LETTERS

Present a brilliant neon-like appearance with no special illumination. Sturdy 4" and 6" sizes in lively flaming red.

WAGNER TRANSPARENCY FRAMES

Inject the compelling power of brilliant photographic realism in marquee displays by using colored transparencies which you can have made locally. We can provide the liquid solution and instructions for treating.

These transparencies can be made to fit Wagner Patented Transparency Frames, which in turn fit any Wagner Master Multiple Frame.

Wagner Transparency Frames are available in size 21¾" x 25¾" to accommodate 21" x 25" transparencies and in size 30¾" x 40¾" to accommodate 30" x 40" transparencies. Larger sizes on special order.

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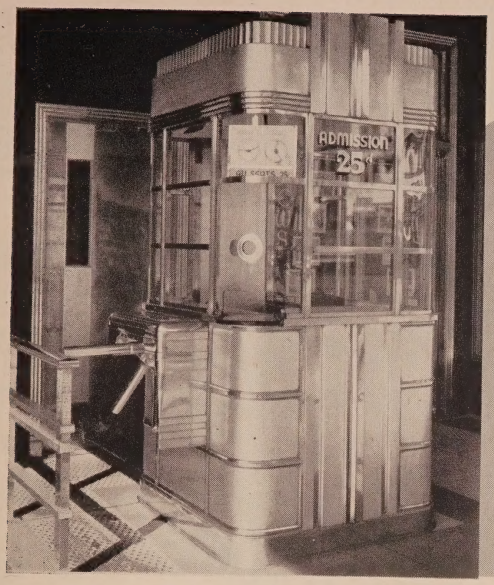
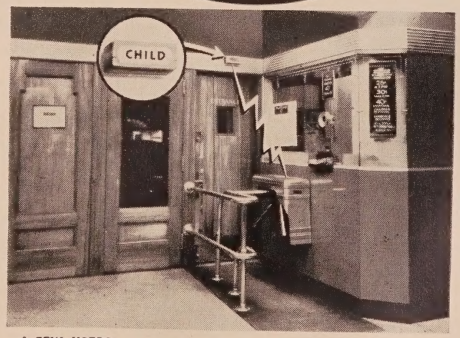


Stop Boxoffice Losses!

THE PEREY "Magic Barrier" TURNSTILE SYSTEM

- Assures an automatic tamper-proof, registered count on all admissions, so accurate that it is accepted by the Internal Revenue Department for tax purposes.
- Cuts your payroll by eliminating the necessity of ticket takers.
- Prevents pilfering by cashiers and cashier-doorman manipulation schemes.
- Stops gate-crashing and "walk-ins".
- Eliminates the need of costly ticket machines, ticket choppers and tickets.
- Permits closer attention to change-making by simplifying the cashier's job.
- A separate register is provided for price differential between adults and children. A conspicuous indicator lights up on all child admissions, preventing the juggling of adult and children admissions by the cashier.
- Handles peak business faster. Automatically guides patrons from the boxoffice to the entrance.
- Invariably pays for itself in a few weeks by revenue previously lost.
- Readings quickly taken at the time of admission scale change.
- Satisfies strictest safety requirements. The entrance becomes a non-registering exit in emergencies.
- Locking arrangement prevents entrance when the theatre is closed.
- Well constructed for constant use without failure.
- Requires little space.
- May be installed anywhere regardless of slope of the floor.



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THE PEREY TURNSTILE COMPANY

101 Park Avenue • New York 17, N. Y.

ADLER Engineered

2-TONE Colorful PLASTIC LETTERS including 17" "Lok-Lip" (TRADE-MARK) SAFETY LETTERS

Guaranteed CAST ALUMINUM LETTERS

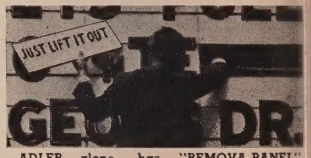
Famous STAINLESS STEEL GLASS-IN-FRAME UNITS and Exclusive PATENTED "REMOVA-PANEL" FRAMES

Original "THIRD DIMENSION" (TRADE MARK) LETTERS USED INTERCHANGEABLY IN ALL POPULAR SIZES

Brilliant ADLER 2-Tone "THIRD DIMENSION" PLASTIC LETTERS are toughest and strongest, extra thick, with integrally molded supporting means — practically unbreakable. Come in popular sizes and permanent, translucent red, green or blue colors. Used interchangeably with ADLER CAST ALUMINUM LETTERS. 17" "Lok-Lip" PLASTIC SAFETY LETTERS are self-locking on the frames—cannot fall off or blow off, yet are easily handled in and out for quick changing. Fit on all existing frames.

ADLER "THIRD DIMENSION" CAST ALUMINUM CHANGEABLE LETTERS come in all popular sizes—4"-6"-8"-10"-12"-16"-24"—for interchangeable use in sizes from 8" to 24"—also interchangeable with ADLER PLASTIC LETTERS—all on the same supporting frames. Letters can be read from an angle or at a distance. Easily and quickly changed. Sold under guarantee that "FOR EVERY ADLER CAST ALUMINUM LETTER YOU BREAK, WE GIVE YOU A NEW ONE FREE."

ADLER 18-8 STAINLESS STEEL GLASS-IN-FRAME UNITS are admittedly the strongest, most rigid and safest construction available today. Exclusive LOCKED-IN-LINE feature holds frames in perfect alignment—letters slide freely anywhere in the sign. Dove-tail interlocking fit assures light-tight joints. Furnished in 2 Types: REGULAR TYPE where every other glass-in-frame unit is made removable for maintenance; exclusive, patented "REMOVA-PANEL" TYPE (see right).



ADLER alone, has "REMOVA-PANEL" Frames to fill large openings OF ANY HEIGHT OR LENGTH, without divider bars, permitting all maintenance anywhere in the sign through "REMOVA-PANELS," without removing frames.

Paramount Theatre, Paris, France, an unusual front and distinctive theatre name treatment, with two attraction boards using 16" and 10" Adler "Third Dimension" Letters interchangeably on the same Adler frames.

Low-Cost "SECTIONAD" (PAT. PEND.) (TRADE-MARK) Built-Up CHANGEABLE LETTER DISPLAYS

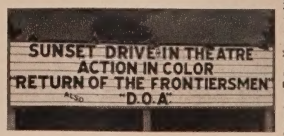
Provide modern, inexpensive changeable program displays for Drive-In Theatre attraction boards and approach boards, as well as for indoor theatres. ADLER "SECTIONAD" comes in Porcelain Enamel or Baked Enamel Galvannealed Steel backgrounds with Adler Underwriters approved Stainless Steel Letter Bar construction built in, to hold both Adler "Third Dimension" PLASTIC and CAST ALUMINUM Letters interchangeably.

The sectional panels are furnished 7" high and 10' or 5' long to build up displays of any corresponding height or length. Attractive border sections may be easily removed for adding extra sections to either height or length of displays. Reinforced solid channel construction is strong and rigid, wind and weather resistant. Holes are provided to fasten on neon, borders, name, etc. Displays are easily installed against building wall or on free-standing supports. Illumination is from the front by spot-lights, trough reflectors, goosenecks, etc. SEND FOR COMPLETE FREE FOLDER.

Famous Players Gaiety Theatre, Winnipeg, Canada, a modern, brilliant marquee with 16" and 10" Adler "Third Dimension" Letters on Adler "Remova-Panel" Frames.

Odeon Theatre, Toronto, Canada. ONE OF THE HIGHEST SINGLE SILHOUETTE CHANGEABLE LETTER OPENINGS EVER BUILT ANYWHERE! 15 ft. (25 bars) high —15 ft. long, straight and curved. Adler 17" and 10", 2-Tone "Third Dimension" PLASTIC letters and Adler 8"-10"-12"-16"-24" Cast Aluminum letters are used interchangeably on Adler "Remova-Panel" Frame construction. SERVICED WITHOUT REMOVING FRAMES FROM SIGN.

Suburban Drive-In Theatre, Bradenton, Fla., showing one of 3 sides of Adler "SECTIONAD" Display, each side 20' long x 4 lines high, using 17" and 10" Adler PLASTIC Letters. Note spot lights at bottom.



Sunset Drive-In Theatre, Factoria, Wash. Adler "SECTIONAD" Display 20' long x 4 lines high, lighted with gooseneck reflectors. Adler 12" CAST ALUMINUM Letters shown. Note inexpensive wood supports.

CHANGEABLE PROGRAM DISPLAYS

NOTE ALL THESE IMPORTANT FEATURES

"THIRD DIMENSION" PLASTIC LETTERS in popular sizes, used interchangeably on same frames with Adler Cast Aluminum "Third Dimension" Letters—including new 17" "Lok-Lip" Plastic Safety Letter.

"THIRD DIMENSION" CAST ALUMINUM LETTERS in 4"-6"-8"-10"-12"-16"-24" sizes, for interchangeable use of all sizes, from 8" to 24".

"REMOVA-PANEL" EQUIPMENT—Straight or Curved—Not necessary to remove any frame for maintenance.

MULTI-DECKER FRAMES FOR INTERCHANGEABLE USE OF 8" to 24" "THIRD DIMENSION" LETTERS.

LOCKED-IN-LINE FRAMES Stainless Steel—strong, rigid, skyscraper-like construction—light-tight joints.

GLASS-IN-FRAME CONSTRUCTION—we furnish the glass and glaze frames complete before shipment.

FRAMES SET DIRECTLY IN GROOVES OF SIGN—no changes required—no clips to scratch the surface.

POPULAR 10"-16"-24" COMBINATION—letters line up perfectly—larger letters for STARS and TITLES.

TOUGH, BAKED FINISH ON CAST ALUMINUM LETTERS—for long, satisfactory service.

ATTRACTIVE COLORS—standard finish on Cast Aluminum Letters, black face and silver bevels. Red, blue, green, amber or other colors furnished. PLASTIC Letters in solid, permanent colors through-out—red, green and blue.

⅞" WIDE GROOVE CONSTRUCTION—recommended, but we also furnish frames to fit existing grooves as narrow as ¼" wide.

CURVED MARQUEE FRAMES WITH OR WITHOUT CURVED "REMOVA-PANEL"—OR MITRED FRAMES.

WONDERFUL FOR REPLACING OLD STYLE LETTERS. We furnish frames to fit any existing grooves, down to ¼" wide.

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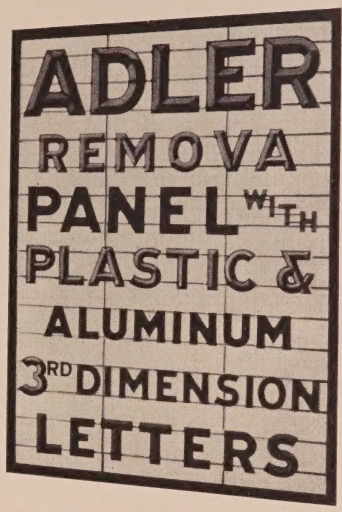
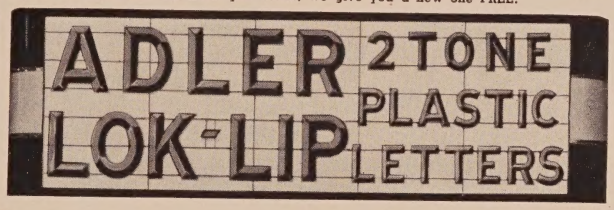
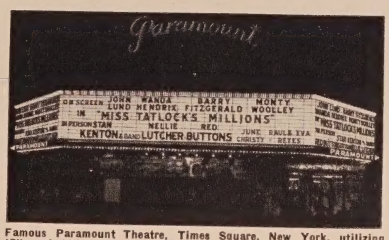
GUARANTEE—For every Adler Cast Aluminum letter you break, we give you a new one FREE.



WRITE FOR SAMPLE 17" *"Lok-Lip"* SAFETY LETTER TO TRY OUT IN ANY SIGN — ALSO FREE CATALOG



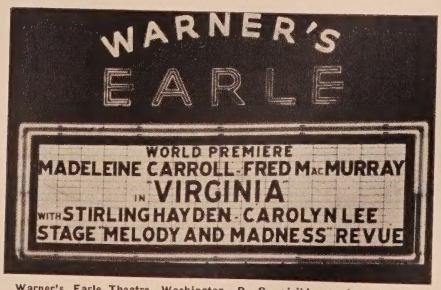
RKO Hillstreet Theatre, Los Angeles, Calif., a large, modern straight and curved marquee with 10" and 16" Adler "Third Dimension" Letters on "Remova-Panel" frame equipment.



Famous Paramount Theatre, Times Square, New York, utilizing 17" and 10" Adler PLASTIC "Third Dimension" Letters used interchangeably with Adler 24"-16"-12"-10" Cast Aluminum Letters, all on Adler "Remova-Panel" Frames.

Airline Drive-In Theatre, Jefferson Parish, La. Adler 17" and 10" PLASTIC Letters are used on the same frames — Adler "REMOVA-PANEL."

Loew's State Theatre, Newark, N. J. Here the larger 24" Adler "Third Dimension" Letters provide effective display with 10" Letters, all on the same "Remova-Panel" Frames.



Warner's Earle Theatre, Washington, D. C., visible opening 32' long x 9' high (7½ lines). 8"-12"-16"-24" Adler "Third Dimension" Letters on "Remova-Panel" Frames. Installed January, 1941.

Fox Theatre, Missoula, Mont., with 10" Adler "Third Dimension" Plastic Letters used interchangeably with 16" Adler Cast Aluminum Letters.

UNITED STATES PATENTS		Canadian Patents
No. 1,830,414	No. 2,163,298	No. 369,858
No. 1,989,855	No. 2,272,733	
No. 2,038,978	No. 2,284,626	No. 411,691
No. 2,113-285	No. 2,313,723	
No. 2,144,954	No. 2,313,724	No. 421,193
No. 2,155,904	No. 2,319,910	England Patent
No. 2,156,257		
And other Patents Pending		No. 442,512

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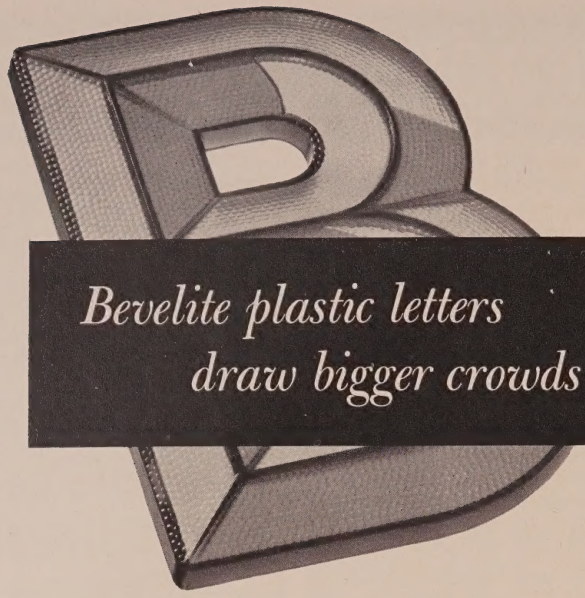
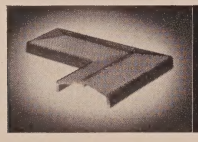


BEVELITE letters *sell* the public, as no other letter possibly can. It's the magnetic beveled fronts of each Bevelite letter that do it—plus brighter colors and better design.

Bevelite plastic letters draw bigger crowds

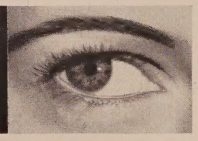
Only Bevelite has the beveled fronts that give it *actual* third dimension. And that means only Bevelite has third dimension during daytime when there's no marquee illumination to give letters the *appearance* of third dimension. Daylight reflects off the beveled fronts, makes the letters more

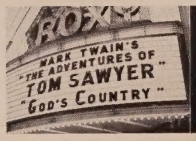


beveled fronts give actual third dimension

visible from greater distances, gives your marquee more impact on the public. Brighter colors, molded clear through the plastic for longer life, give your marquee more eye-appeal. Better design makes it easier to read your selling message—from those

brighter colors mean more eye-appeal

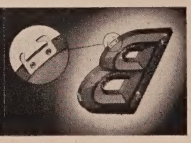




better design means easier reading

greater Bevelite distances. But that's not all there is to Bevelite. Metal lock-lugs on each letter mean greater durability, help protect you from breakage because of cold weather or careless handling. Only Bevelite has the metal lock-lugs that mean longer life.

metal lock-lugs give longer life



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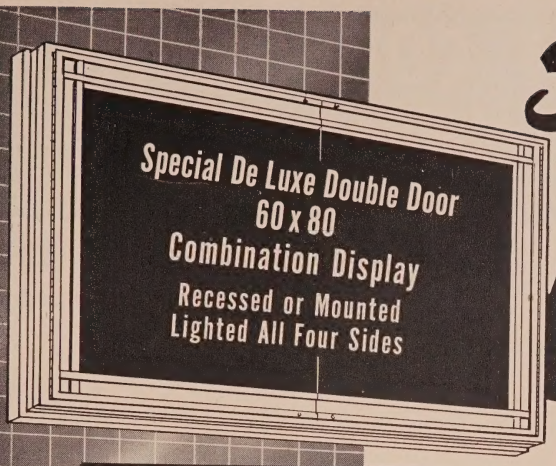
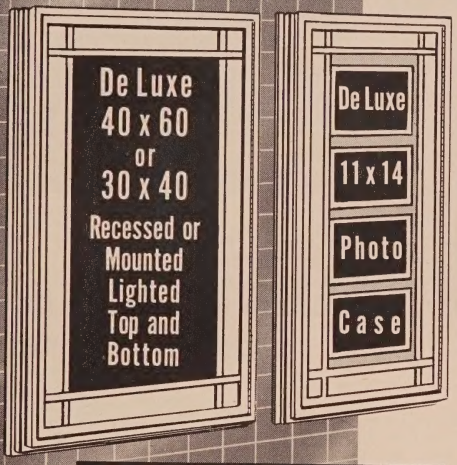
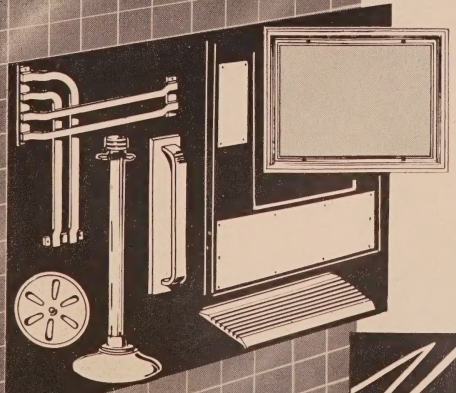


LOBBY FRAMES



ACCESSORIES



Wherever there is a theatre, there is need for a Sealuxe Theatre Display System and Other Sealuxe Accessories

In 1940 Universal Corporation created theatre display frames of showmanship design and quality that established leadership in this field. That leadership has never been questioned. Sealuxe frames are fabricated of extruded aluminum shapes. The use of this material makes possible frames of enduring beauty —frames that will never sag, become loose at the corners, nor get out of shape—frames that will not tarnish, never require polishing, never need to be painted.

When you invest in a Sealuxe Theatre Display System, the first cost is the last cost.

The same superior grade of materials, design and workmanship is dominant in other Sealuxe Theatre accessories; push and pull bars, no-draft speaking tubes, lobby posts, kick and push plates, etc.
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"America's Largest Matting Specialists"

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AT ALL POINTS IN THE THEATRE

FOR A DISTINCTIVE ENTRANCE
PERFORATED CORRUGATED MATTING

Especially recommended for odd shaped entrances. Good dirt removing qualities. Long wearing. 36" or 48" wide. Three thicknesses: 1/4", 3/8", and 1/2" in a variety of attractive colors. Any design or special style lettering can be furnished and in contrasting colors to the main background. Withstands rough handling.

FOR A BEAUTIFUL LOBBY
EZY-RUG RUBBER LINK MATTING

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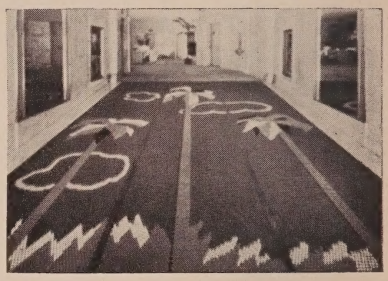
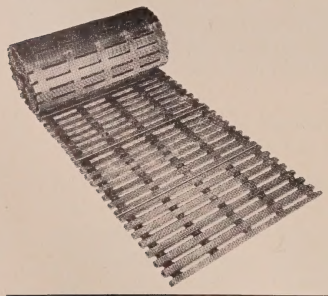


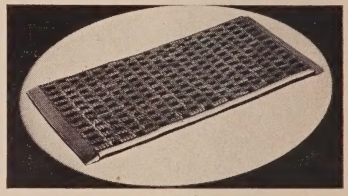
FOR BACK OF CANDY COUNTERS, POP-CORN MACHINES AND IN LAVATORIES
AMERICAN COUNTER-TRED MATTING



Non-slip surface. Resiliency reduces fatigue. Exceptionally tough and long wearing. Made of cotton cord bound together with rubber compounds. Ridged bottom affords aeration and drainage. Rolls up for mopping of floor. Easily handled for cleaning. 3/8" thick. Two feet wide. Any length in one foot multiples.

FOR BACK OF COUNTERS
TUF-TRED CORDED RUBBER MATTING

The most popular low priced safety matting. Constructed of corrugated rubber fabric links, strongly laced on galvanized rust-resisting steel wires, reinforced by metal plates and clips. Long wearing. The only mat of its kind equipped with non-trip beveled safety nosing on the ends. 5/8" thick, up to 6' wide, any length.



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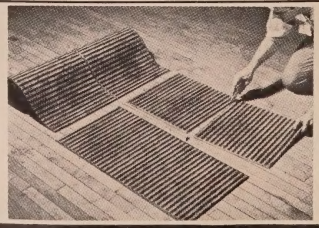

DO-ALL RUBBER AND CORD MATTING

Ideal for entrance, lobby and foyer. Four mottled colors: Venetian Red, Erin Green, Delft Blue and Mosaic.

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INTERIOR *and* AUDITORIUM

1950-51

Selecting Upholstery Fabrics for Chairs

Criteria Used in Choosing Materials and Tests Performed To Determine Fulfillment Are Studied

By MARINUS WESTRATE
Research Department, American Seating Co.
(Sketches by Don Daverman)

Upon the shoulders of the theatre chair manufacturer falls the responsibility of endeavoring to provide a selection of the best materials available for certain applications. Theatre chair buyers carry the responsibility of making a wise choice from that selection—a choice that fits the needs of a particular theatre and its circumstances.

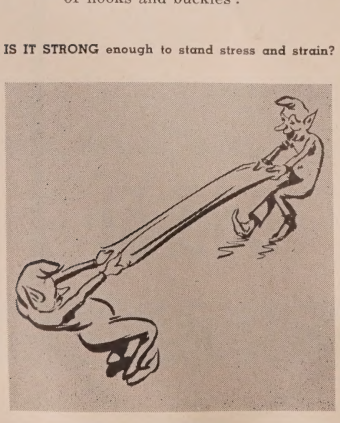
The theatre chair manufacturer trys to fulfill his responsibilities through careful sampling, analyzing, testing, checking, and rigid inspection. There are thousands of kinds of constructions, weaves, patterns, and coatings from which the manufacturer must select the proper goods. An infinite variety of fabrics are suitable for household use but are not at all satisfactory for public seating.

PILE FABRICS

In view of his solemn duty to provide the buyer with the best possible selection of fabrics from which to choose those most suited to the needs of a particular theatre, the chair manufacturer must carefully evaluate the wearing potentialities of the materials which he intends to offer for use on his chairs. Certain yardsticks, listed below, must guide him in the choice of any pile fabric for this purpose:

1. Will it resist clothing abrasion?
2. Is the fabric construction strong enough to withstand the stress and strain encountered in assembly to the cushion, and in usage?
3. Is it crock-proof?
4. Do the colors resist perspiration transfer?
5. What is its ability to flex and fold? Does it have good pile anchorage during this kind of treatment?
6. Is it comfortable to sit on?
7. Will it resist the snagging effects of hooks and buckles?
8. Can it be cleaned?
9. Does it have proper body and weight to tailor well?
10. Does it have eye appeal?
11. Is there sufficient mat resistance to maintain a neat appearance?
12. Is the quality and cost within a practical limit?

IS IT STRONG enough to stand stress and strain?



The answers to the above questions can be obtained only through testing and experience, for they alone give a true picture of the life, serviceability, and wearability of fabrics. The points raised serve as valuable guideposts in the selection of fabrics which yield the maximum in performance wherever they are installed.

During many years, the American Seating Co., for example, has obtained comparative ratings of various types of fabrics through mechanical tests which simulate in accelerated and intensified form the many abuses to which fabrics are exposed during their periods of service.

Abrasion Resistance

Abrasion resistance is measured with the American Seating Co. edgewear testing machine. A 2½″ x 6″ block is covered with a piece of sateen, twill side out. This is rubbed back and forth through a 5″ stroke across the upholstery specimen, which is wrapped around the face of a round metal bar ¾″ in diameter. After 40,000 cycles, the resistance of the fabric is judged according to standards that have been correlated to actual service use.

Stretch and Strength Values

These values are important in gauging a material's ability to take the stretching and tightening necessary in neat tailoring, and the additional stretching that takes place in use on the chair. The laboratory obtains the stretch and strength values by a tensile-testing machine. This machine records, on a Tensilegram, the inches of stretch and pounds of stress that a given fabric shows before it fails.

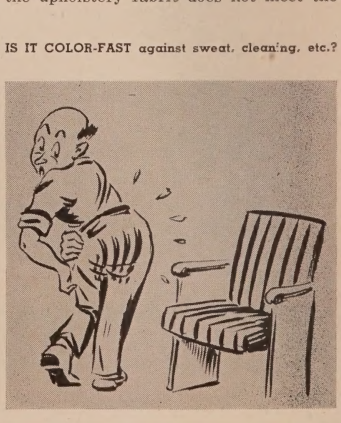
Crock Testing

This is a simple test that involves rubbing a white, dry cloth over the face of a piece of upholstery fabric. Unless fabrics are thoroughly washed and rinsed in the finishing process of manufacture, minute particles of dye remain lodged on the fibres to cause possible discoloration on the clothing of chair occupants. These are usually insoluable particles that can be washed out of the soiled clothing, and discoloration of this kind is seldom permanent.

Perspiration Fastness

Perspiration fastness is one of the most important requirements of public-seating upholstery fabric. Permanent damage can be done to light-colored clothing if the dyes in upholstery fabrics are affected by perspiration and made fugitive. Perspiration-moist clothing quite often comes in contact with upholstery fabric, and the danger of color transfer is a constant threat, if the upholstery fabric does not meet the

IS IT COLOR-FAST against sweat, cleaning, etc.?



BRIEF: ***Believe it or not . . . 135 miles of winding truckline . . . on a typical U. S. highway . . . could be covered with the upholstery material processed at American Seating Co. during 1950 . . . Pile fabrics covered 107 miles of this hypothetical distance . . . while imitation leathers accounted for 28 of them . . . some quantity of goods!***

These yards and yards of seat coverings represent a great deal of responsibility as well . . . on the part of the theatre chair manufacturer in offering a wide range of the finest materials available to fit a variety of budgets . . . and on the part of the buyer in choosing fabrics that meet his requirements to best advantage . . . from the points of view of decorative effect, comfort, service, etc.

Outlined in the following article are the standards . . . which both pile fabrics and imitation leathers should meet for theatre use . . . and the tests which are applied to determine whether or not materials do measure up to par . . . Since playhouse seats must stand up to terrific abuse . . . the helpful advice given on the selection of fabrics that can take a beating . . . and come through ready for more years of faithful service . . . is well worth the attention of every theatreman.

perspiration-fastness test requirements.

The test is simple, since a cloth, with floating yarns of wool, cotton, rayon, acetate and nylon, is saturated with synthetic perspiration and placed in contact with the upholstery fabric under sufficient pressure to insure firm contact. This condition is maintained for one-half hour at a temperature of 100° F., after which the test cloth is examined. If all the floating yarns are free of color, the material is satisfactory. In some instances, only one or two kinds of yarn will be affected, while the others remain unchanged. This condition indicates that the yarns are susceptible to color transfer; a garment made of that kind of yarn, which comes in contact with a perspiration condition, will be soiled, probably permanently. Expensive claims can be avoided by close attention to this matter.

Pile Anchorage

Some fabrics, made with a V-weave construction and without rubberized backing, will shed the pile tufts, leaving bare spots in the backing of the fabric when it is subjected to the use and abuse of public seating. Such a weakness in this type of pile fabric can be hurriedly detected by stretching a piece of the fabric between both hands while the thumb pushes the ends of the piles on the face side of the fabric. If the pile leaves the face and comes through the backing, there is an indication that it will be weak in pile anchorage. There are fabrics which have high pile and thread counts that cannot be defaced this way, for the crowded condition of the pile tufts resist such damage. It pays to use a fabric with a W-weave, one with a V-weave and a rubberized back, or a type with a high-pile count for side-boxing of seat cushions.

IMITATION LEATHERS

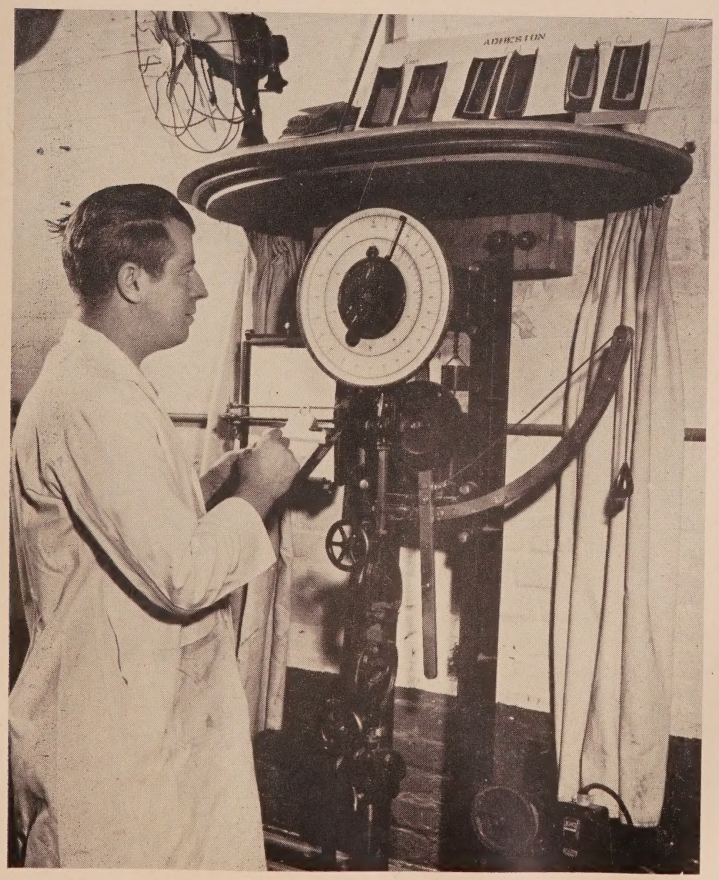
Imitation leathers, defined in this article to mean only fabric - coated materials, and not the unsupported film types which are not suitable for public seating where there is flexing present, come in for their share of scrutiny also as chair covering materials. Just as with the pile fabrics, the manufacturer who intends to use them to upholster his products must take a number of questions under consideration. Some of the points to be raised in connection with an imitation leather are as follows:

1. Does it have sufficient abrasion resistance?
2. How long can it be used under various conditions before it becomes hard and brittle?
3. Is there sufficient anchorage between the coating and the backing?
4. How good are its flexing and folding characteristics?
5. Does it crock?
6. What about color transfer to clothing when perspiration is present?
7. What are its stretch and strength values?
8. Is it resistant to the effects of popcorn oils, greasy clothes, and body oils?
9. Does its finish permit easy ingress and egress?
10. Is it pliable, and does it make up well on a cushion?

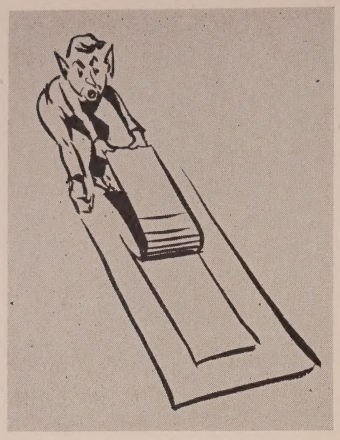
Although tests for abrasion resistance, crocking, perspiration fastness, stretch and strength values, etc., similar to those used to evaluate pile fabrics, are given

CAN IT RESIST clothing abrasion and edge wear?

THE ADHESION TEST furnishes important data on so-called imitation leathers, for much of their workability and future life depends on the backing materials and the way in which the coating adheres.



DOES IT HAVE BODY to take the tailoring?



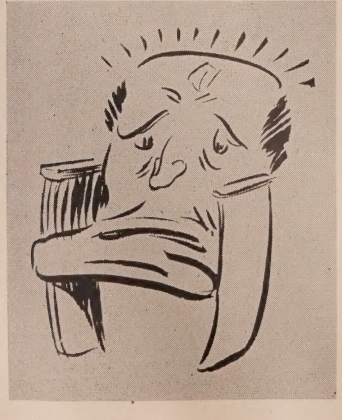
IS THERE ANCHORAGE backing and surface?

to imitation leathers, there are other very important tests for the former that enable the chair manufacturer to obtain the best materials available for his use.

Aging Test

Aging tests on vinyl-chloride imitation leathers are actually plasticizer-removal ones. In actual service, plasticizers are removed from the coatings by normal atmospheric conditions, but the removal is accelerated by changes in temperatures. They are removed also by wiping off on the clothing of chair occupants. When plasticizers are removed, the coating or film returns to its original hard and brittle state, in which it is no longer pliable. Consequently, it cracks and eventually peels from the cloth backing. Aging tests can and are conducted by actual service use, but these obviously take too long for general purposes. Accelerated plasticizer-removal tests are done by ultra-violet exposure, gasoline immersion, and activated-carbon exposure. The latter two give a quick indication of the material's ability to remain pliable throughout its service life. The ultra-violet test is time-consuming and requires expensive equipment.

WILL IT GET BALD through bad pile anchorage?



The aging characteristic is one of the most important in considering imitation leathers for public seating. Since the end of World War II, hundreds of thousands of yards of these coverings have become hard and boardy with consequent cracking and peeling. There are, however, good formulations in vinyls now that can and are being used safely.

Adhesion Test

Another very important factor in selection and acceptance of imitation leather for public seating is the adhesion of the coating to the backing. Complaints may be brought to a minimum, however, by specifying material with an adhesion value of at least 4.5 pounds. The adhesion is measured on a tensile-recording machine by pulling a 1″ strip of coating from a piece of imitation leather at 2″-per-minute speed. A dial indicator shows the adhesion resistance in pounds as the tensile pull is made.

Oil-Resistance Test

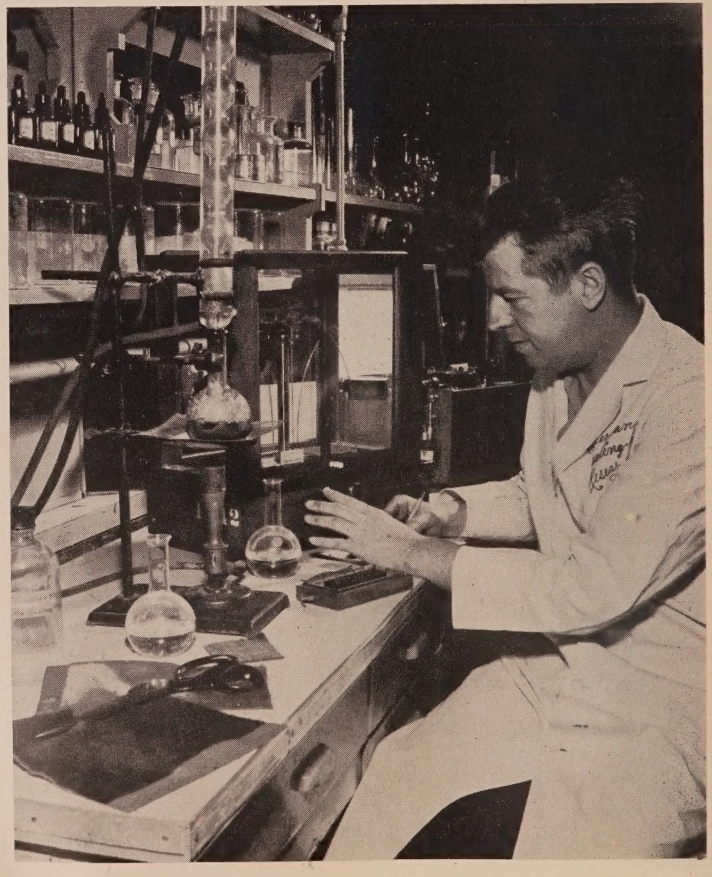
Human-perspiration oils and popcorn oils have a deteriorating effect on some types of imitation leather. The rubber-base type, used prior to 1942, softened under these conditions. Certain vinyl-plastic types have hardened in contact with these types of oils. The laboratory can readily determine the oil resistance in tests designed to bring out these properties, and a definite stand should be taken against use of those materials whose condition is changed by oil contacts.

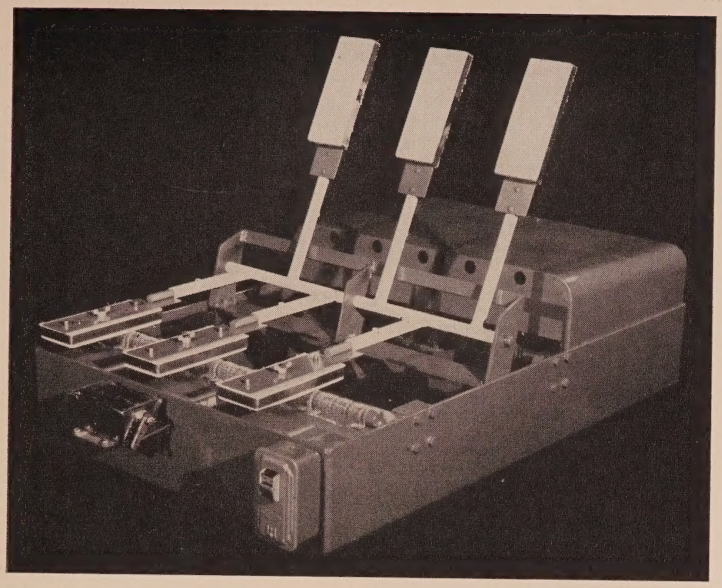
OTHER CONSIDERATIONS

In addition to the foregoing criteria to be used in the selection of upholstery fabrics for chairs, a number of other discoveries have been made which should prove helpful to those buying theatre seats. The following tips, evolved through extensive laboratory research and field tests, are well worth food for thought:

1. Long-pile mohair fabric, made with at least 225 pile tufts per square inch and 7.4 oz. mohair per square yard content, is an excellent type of soft goods to use in public seating for the following reasons: luxury; distinctive and beautiful lustre; retention of original attractive

FIBRE CONTENT ANALYSIS is a method for determining the approximate percentage of animal and of vegetable fibres present. On this will depend its body, wear resistance, lustre, reaction to cleaning, etc.





ABRASION TEST MACHINE contrasts the edge wear on an assortment of different fabrics under exactly the same conditions. Studies can be made at various intervals and each fabric's resistance noted.

appearance; excellent wearing qualities and resistance to soiling; minimum of maintenance required; and less vandalism.

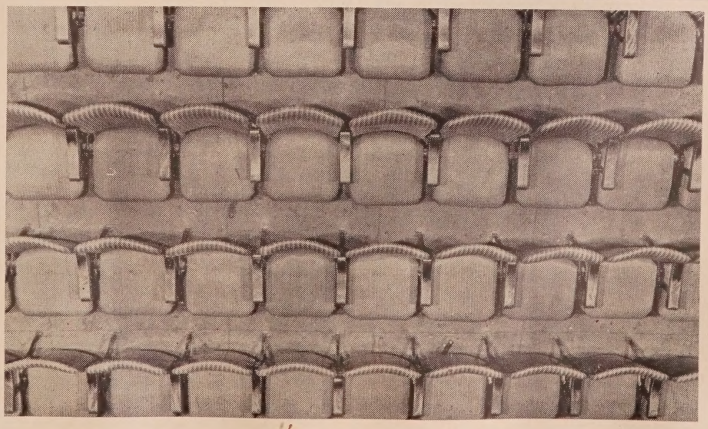
2. Fabrics made with mohair cotton and rayon fibres, properly blended into the pile construction, will give excellent service.
3. 100% - cotton velours, tightly woven, will give good service. Light colors, however, show soil quickly.
4. Flat, non - pile fabrics usually show soil early in use. Some wear well, but all show wear earlier than pile fabrics.
5. Better-quality fabrics are actually better values and will cost less in the long run.
6. Loop-pile type fabrics or tapestries, with long floating yarns, become defaced with buckles, hooks, etc.
7. Fabrics made with smooth synthetic yarns in the body of the fabric will unravel easily and pull out at the seams of cushion covers. Fabrics with less than 32 fill threads per inch will pull out at the seams, unless they are rubberized on the back side.
8. High-quality, woven, plastic-yarn cloths, with their decorative weave designs and colors, can be used with highly satisfactory and pleasing results when sewn properly to soft-fabric side-boxings.
9. It is extremely hazardous to use unsupported plastic films over spring and resilient-cushion construction. The film will crack or split open to expose the cushioning. Soon after this happens, the cushion is plucked out and destroyed by vandals.
10. Unsupported plastic films take a permanent set. They can be stretched, after which they will return to very nearly their original shape. If this stretching is repeated, the return will be less each time. This characteristic causes areas of loose wrinkles in the seats and backs.
11. Cloth-supported imitation leathers with properly formulated coatings make excellent covering for certain installations. Some of imitation leathers' characteristics are: their ready adaptability to washing for sanitary purposes; good seating properties through the slippery surface, which enables chair occupants to move around in their seats without having their clothes shift as well; and the formation of a moisture-proof barrier for the cushioning materials.
12. Nylon fabrics have wonderful abrasion resistance, but, unless they are suitably constructed with proper yarns, they produce a matted-down appearance. Nylon fabrics with a combination-cord weave and pile stripe are best for public seating. There are several styles on the market, in frieze patterns, flat weaves, and pile constructions. Most of them are good for household use, but for public seating extreme care must be exercised to select those that will serve well.

There are more matters to consider in buying upholstering materials than the average individual realizes. Many thousands of dollars a year are being wasted because improper choices are made. It is hoped that the foregoing will be of benefit to those who will be faced with the responsibility of wise selection in the future.

IN REUPHOLSTERING TOO . . . THE FABRICS ARE IMPORTANT

While the life of a theatre chair is generally conceded to be eight to ten years, vandalism, heavy traffic, and other relatively local conditions often reduce this period and cause a need for earlier rejuvenation. Then again, chair life can often be stretched for several years longer through a complete reupholstering job.

Pictured here is an interesting view of the freshly reupholstered chairs in the Strand, Lexington, Ky. An attractive weave of gray, green and red Lumite on the backs and a single stripe weave of the same fabric on the seats has produced a trim, serviceable result. Lumite woven plastic fabrics have become popular among theatres due to their stain-proof, non - inflammable, long - wearing, and easy cleaning characteristics. Still another attribute of woven plastic fabrics is their unique "breathing" quality permitting air to circulate between the threads and eliminate sticky feeling.



Public Service of the Water Cooler

An Indispensable Aid in the Creation of Goodwill Is Considered From a Sound Functional Viewpoint

By FRANCIS E. MOQUIN
Refrigeration Specialities Department
Westinghouse Electric Corporation

The question, "Where can I get a drink of water?", arises in the minds of theatre patrons every day in every theatre in the nation, for, regardless of the section of the country, the type of theatre, or the makeup of the audience, a sizable percentage of the customers will want to quench their thirst some time before they leave the theatre.

The effort which the theatre management makes to provide a convenient source of properly cooled drinking water, entirely free from contamination of any sort, will be a major influence in forming the opinion which the patrons take with them when they leave the theatre. It should be remembered that even though soft drinks are available, there are many elderly patrons and small children to whom only pure water will appeal.

This problem of furnishing properly cooled drinking water can be quite easily and inexpensively solved through the installation of self-contained electric water coolers. These coolers need only to be connected to city water and drain lines and plugged into an electrical outlet; an inexhaustible supply of invitingly cool water is thus always available.

Hundreds of thousands of such coolers are now in service in every type of industrial, commercial, and institutional organization—many have been on the job for more than 15 years.

Sanitary Features

While an electric water cooler is basically a refrigeration system, such as is used in a refrigerator or home freezer, it actually does much more than simply cool water. It provides, in addition, a spotless, sanitary reservoir, completely free from contamination, which delivers the water in an appetizing stream merely by releasing the bubbler valve. Attractive in design and inviting in appearance the electric water cooler is an impressive sign of consideration for patron comfort.

The bright, sparkling stainless steel or vitreous china top is easy to clean and keep clean, while the chrome-plated, overhanging bubbler guard adds to the attractiveness of the cooler and prevents the lips of the user from touching the bubbler outlet. A large, non-clog drain serves the double purpose of providing greater cooling capacity by pre-cooling the incoming water, and assures the swift disposal of any foreign matter which might find its way into the drain.

For greater convenience, water coolers are now equipped with bubblers operated by a foot pedal, so that it is no longer necessary for the user to rest his hands on the cooler top. Women theatre-goers, especially, appreciate this feature not only because it is more sanitary, but also because it means no more wet gloves. A foot-pedal-operated bubbler also allows the use of more rugged parts in the bubbler valve, thus assuring trouble-free service and longer life.

BRIEF: ***Every theatre . . . which shrewdly aspires to be "a home away from home" . . . must endeavor to provide . . . insofar as possible . . . all of the comforts to which the patron is accustomed in his own domicile . . . One of the most important of these is . . . of course . . . a constant supply of cool drinking water.***

Self-contained electric water coolers are the most obvious . . . and the most practical . . . answer to the thirst-quenching desires of the customers . . . Easy to install and operate . . . while guaranteeing a continuous supply of fresh water at little cost and trouble . . . these units go a long way toward making the patron glad that he came to the theatre where they are installed . . . As a matter of fact, efficient water coolers have come to be recognized as necessaries matching clean rest rooms in importance . . . on the scale of services which the progressive theatre must provide.

Below are discussed such water cooler fundamentals as: sanitary features . . . elimination of water spillage . . . special attachments . . . uninterrupted service . . . manufacturing standards . . . selection of sizes . . . locations . . . and drive-in theatre applications.

SISTER SUE AND JUNIOR, TOO, can generate a thirst and the owner who places accent on public service must provide facilities for both. Small tots need no assistance in drinking from this accessory.

Elimination of Water Spillage

Of particular concern to theatre management is the matter of water spillage which can become a problem with any type of liquid dispenser, if steps are not taken to prevent it. Water cooler manu-

facturers have licked this problem with several construction innovations built into water coolers. One of these in an anti-squirt orifice which makes it impossible for prankish youngsters to squirt water from the bubbler by placing their fingers over the bubbler orifice. Such action now results in the water so restricted running meekly out the two holes in the side of the orifice and down the drain.

The two rather unpleasant surprises of being hit in the face with a high stream of water when releasing the bubbler valve, or, equally bad, finding a mere trickle of water coming from the bubbler, have been eliminated through the use of an automatic stream height regulator. This regulator assures a proper stream of water at all times, regardless of changes in the city water pressure which might be caused by a heavy draw of water in other parts of the building.

The third feature in this triple-threat attack against water spillage is the anti-splash ridge which is designed as an integral part of the water cooler top. The water striking this ridge is immediately broken up into small rivulets which run safely down the drain.

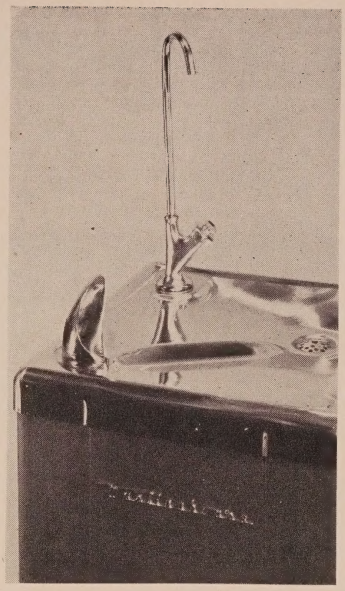
Special Attachments

Theatres which have a large attendance of children have found the "fountain accessory" an ideal solution for providing drinking water for youngsters who are not quite tall enough to drink from a standard size cooler. This small size fountain draws cold drinking water from the reservoir in the water cooler and can be used in conjunction with any standard size cooler which has a remote connection on the back.

As shown in the accompanying illustration, the child-size unit can be mounted directly on the side of a standard cooler at any desired height, or, if preferred, may be mounted on an adjoining wall. An anti-squirt orifice and automatic pressure regulator are also built into this smaller bubbler to prevent splashing.

If, in spite of the many aforementioned convenience and safety provisions which have been made for water cooler bubbler operation, theatre operators find that some of their elderly, bespectacled, or other patrons do not understand or see clearly how the bubbler works, spigot outlets may readily be installed that in no way interfere with the operation of the bubbler and permit water to be drawn from both simultaneously.

These extra water outlets, for which paper cups, rather than glasses, are provided in theatres for sanitary reasons, are generally available in three different types—pushbutton, platform, and pushback. The first of these, the "pushbutton," is operated by a slight push on the button valve while the paper cup is held under the outlet. Water is drawn from the "platform" type by placing a glass or paper cup on the platform to open the valve and allow the water to flow. Lastly, the "pushback" type is operated by pressing the container against a cradle which releases the water valve when pressure is brought against it. This type of outlet is not overly suitable for theatre applications because of the pressure required to release the valve;

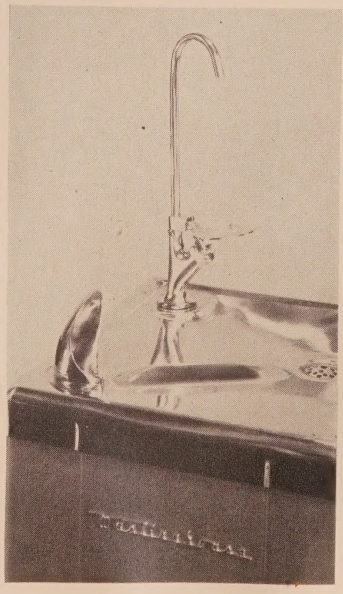


PUSHBUTTON OUTLETS permit the user to fill a cup with a minimum of hand action or contact.

paper cups would, of course, crumple when forced against the cradle. All things considered, the "pushbutton" type is probably the most desirable for theatre installations because paper cups may easily be used with it, and its operation is extremely simple.

Even though the use of any sort of spigot attachment creates a paper cup

PLATFORM OUTLETS are activated by pressing down. They have soda fountain application.



disposal problem, many theatremen may well find that its installation pays extra goodwill dividends in pleasing those patrons who, for one reason or another, prefer to draw a drink in a paper cup rather than from a bubbler. The cost of adding a cup filler to an electric water cooler already equipped with a bubbler is nominal, so if the individual theatre operator feels that such an addition is well worthwhile, he would not be amiss in making it.

Uninterrupted Service

In addition to incorporating such convenience features as those listed above, present day electric water coolers are virtually trouble-free in operation and carry liberal guarantees. For example, all of the 10 different models manufactured by the Westinghouse Electric Corporation are powered by a completely hermetically sealed refrigeration system. This hermetically sealed system consists of the motor-compressor, condenser, and water storage evaporator, all connected together in one continuous sealed cycle.

The system is charged with oil and refrigerant, after which all joints are brazed or hard soldered. Dirt and moisture cannot penetrate this sealed system, and, as it is performance-tested before leaving the factory and cannot be tampered with in the field, the user is assured of trouble-free uninterrupted service.

These coolers are covered by a five-year guarantee plan which consists of a one-year guarantee on the complete cooler and an additional four-year guarantee on the hermetically sealed refrigeration system. Thus, the user is covered for five years on the complete refrigeration system—the heart of any water cooler.

Water Cooler Standards

The Water Cooler and Drinking Fountain Manufacturers Association, in cooperation with the industry and the National Bureau of Standards of the U. S. Department of Commerce, have established uniform methods of testing, rating, and prescribing standard equipment for self-contained mechanical refrigerating water coolors. These criteria have been assembled and promulgated by the National Bureau of Standards under the designation of Commercial Standard CS127-45.

Compliance with this standard by water cooler manufacturers requires that the coolers meet the safety standards of Underwriters' Laboratories, Inc., and further prescribes various manufacturing requirements and sanitary provisions which must be incorporated into the cooler. Manufacturers who comply with the standard are authorized to label their coolers as being built in accordance with CS127-45. The purchaser of a water cooler bearing this proud label may rest assured that it embodies the finest in materials, workmanship, and every other quality which contributes to fidelity of performance.

Selection of Sizes

It is important in selecting a water cooler to obtain one with sufficient cooling capacity to serve the number of

people who will be drinking from it properly. If the cooler installed has too small a capacity, the water supplied will be warmer than desirable, and the objective will not have been reached.

To make it easier for the purchaser to select the size cooler best suited to his needs, the water cooler industry, in general, follows standard methods of capacity rating based upon cooling incoming tap water from 80° F. to 50° F. in a 90° F. room. At these ratings, self-contained electric water coolers are available in sizes ranging from 3 to 22 gallons per hour.

In order to assist the purchaser further in selecting the proper size cooler for various requirements, the water cooler industry (through the National Bureau of Standards of the U. S. Department of Commerce) some time ago issued a table showing the average amount of water consumed by persons under various conditions. It is apparent that workers in heavy industry require more water, due to the nature of their work, than do office workers or department store employees, and this factor must be taken into consideration when selecting a cooler. In the case of theatres, both motion picture and legitimate, it is recommended that 1.0 gallons of water per 100 seats be used as a guide.

Therefore, it is easy to see that a theatre with 1,200 seats should have a water cooler with a minimum capacity of 12 gallons per hour. Oftentimes, however, it is more desirable to obtain two smaller coolers in such a case and to place each in a location where it serves about half the theatre. This not only reduces congestion, but also eliminates waiting in line at peak periods, such as during a change of pictures.

The R. K. O. Theatres Corporation is an excellent example of a theatre chain that recognizes the desirability of providing conveniences and services for its patrons. Placed high on its list of essential services are electric water coolers, and the famous R. K. O. Palace, in New York, has several Westinghouse 12½-gallon water coolers located at strategic points to serve the thousands of movie-goers who flock there daily.

THEATRE SERVICE at the RKO 23rd Street in New York City lacks no diminution in the effort to sell a maximum of "Coke" or "Pepsi"; but there is a modern cold water supply for those who prefer it.

Locations

While there is no absolute best place to install a water cooler, it is generally desirable to place one on the main floor of the lobby where it can be easily seen. Another cooler might well be located in the mezzanine to serve the balcony patrons; coolers may also be advantageously installed near rest rooms. Consideration will have to be given to the availability of city water and drain lines, and each installation has its own peculiarities which must be considered. Water cooler manufacturers' representatives are in a position to offer suggestions and recommendations on all installations.

Drive-In Use

Drive-in theatres have become increasingly important in the motion picture industry during the past few years and have offered service to the theatre-goer as one of their major attractions. Playground areas for children complete with slides, swings, and pony rides; individual car speakers and heaters; clean, well-lighted rest rooms; and well-stocked confection stands are but a few of the ways in which extra provisions are made for the pleasure of outdoor theatre patrons.

In keeping with this policy of service, it is essential that self-contained electric water coolers be included in the drive-in's facilities. Due to the large number of small children who accompany their parents to outdoor theatres, the fountain accessory should be considered as standard equipment on water coolers installed in drive-ins to allow the youngsters to drink without assistance.

The previous yardstick of 1.0 gallon of water per 100 seats can still be used by basing it upon the average number of persons attending per car. Assuming this average to be three, an 800-car theatre would require a water cooler delivering a minimum of 24 gallons per hour. In order to avoid congestion, two 12-gallon coolers would be recommended.

Conclusion

Patronage cannot be taken for granted. A business warrants and receives the confidence and patronage of the public only as long as it indicates that it wants and appreciates their favor.

One of the least expensive and most appreciated methods by which a theatre operator can express this gratitude is through the installation of a self-contained electric water cooler, for it fills a very real need and service by providing satisfyingly cool drinking water with every sanitary protection and convenience for the user.

Structural Considerations for Theatre Plumbing

Installation of the Following Facilities Should Conform with Codes and Standard Practices

BRIEF: ***Satisfactory plumbing and toilet facilities are the indispensable requisites of all public assembly places . . . and the motion picture theatre is certainly no exception . . . The patron does not want to encounter shabby and malfunctioning equipment when he visits the washroom . . . Customer satisfaction is easily attained on this score . . . by proper installation, drainage, and ventilation.***

If up-to-date technical knowledge and the experience acquired by other operators are studied; and if building codes are strictly observed, the usual headaches in theatre plumbing systems can be avoided and costly repairs eliminated. The following information, prepared especially to promote successful installation and maintenance of the plumbing and toilet departments, supplements data presented on pages 151 and 152 of the 1947-1948 THEATRE CATALOG.

Drainage and Sewers

The general rules which apply to the installation of a first-class plumbing job hold true for the theatre, and the layout so far as pipe sizes, connections, venting, etc., are concerned, should follow standard accepted practices and code requirements.

The location of the public sanitary and storm sewers, also their capacity, should be carefully checked and precautions taken to prevent backing up of the sewage or rain water.

If the level of the basement is below the street sewer, then a sump pump to take care of basement drainage is indicated; also if the lowest toilet fixture is below the sewer, then an ejector pit is required with the necessary check and back water valves. Dual pumps for the ejector afford good insurance and are especially desirable in case of heavy rains or flash floods, when no separate storm sewer outlet is available.

A theatre roof necessarily covers a large expanse and during heavy rains is capable of collecting a large amount of water which must be disposed of, through sufficient leaders, by the street sewer. If no storm sewer connection is available, these leaders should connect with the sanitary sewer, through a common leader, on the street side of a back water valve, to prevent backing up of the sewage and flooding through the lower toilet fixtures.

Roof leaders should be equipped at the roof with a substantial type of roof drain which will permit the free passage of water without stoppage by dirt or refuse, and which can easily be cleaned. Roof drains should also have provisions for necessary flashing under the roofing to prevent leakage at these points.

FLOOR TYPE URINALS, above, are considered more sanitary than wall types and eliminate the necessity of floor drains. For maximum efficiency, floor urinals should be finished on the sides with at least a 2-inch space between each two. Louvers in toilet doors, below, will supply conditioned air to washrooms.

Sometimes, in order to lower the cost of the construction, roof parapets are dispensed with and sheet metal gutters and downspouts are substituted. Such construction will be a constant source of maintenance and trouble, and is not recommended except in cases of absolute necessity. Trouble is sure to develop, not only with the sheet metal gutters and downspouts, but also with the top portion of the masonry wall through leaks caused by stoppages, and freezing. Provision should be made for downspouts to drain the marquee, and these should be concealed in the construction.

Toilet Fixtures

Although wall-hung lavatories are less expensive, the leg type is recommended, as this type is less likely to be loosened from the wall. Where more than one lavatory is installed there should be not less than 2 inches between the fixtures, and more if the space is available to allow for proper cleaning. A soap well attached to the bottom of the lavatory with only a plunger above the lavatory has been found very successful. Special punchings are required in the fixture for this equipment and should be made at the time of manufacture.

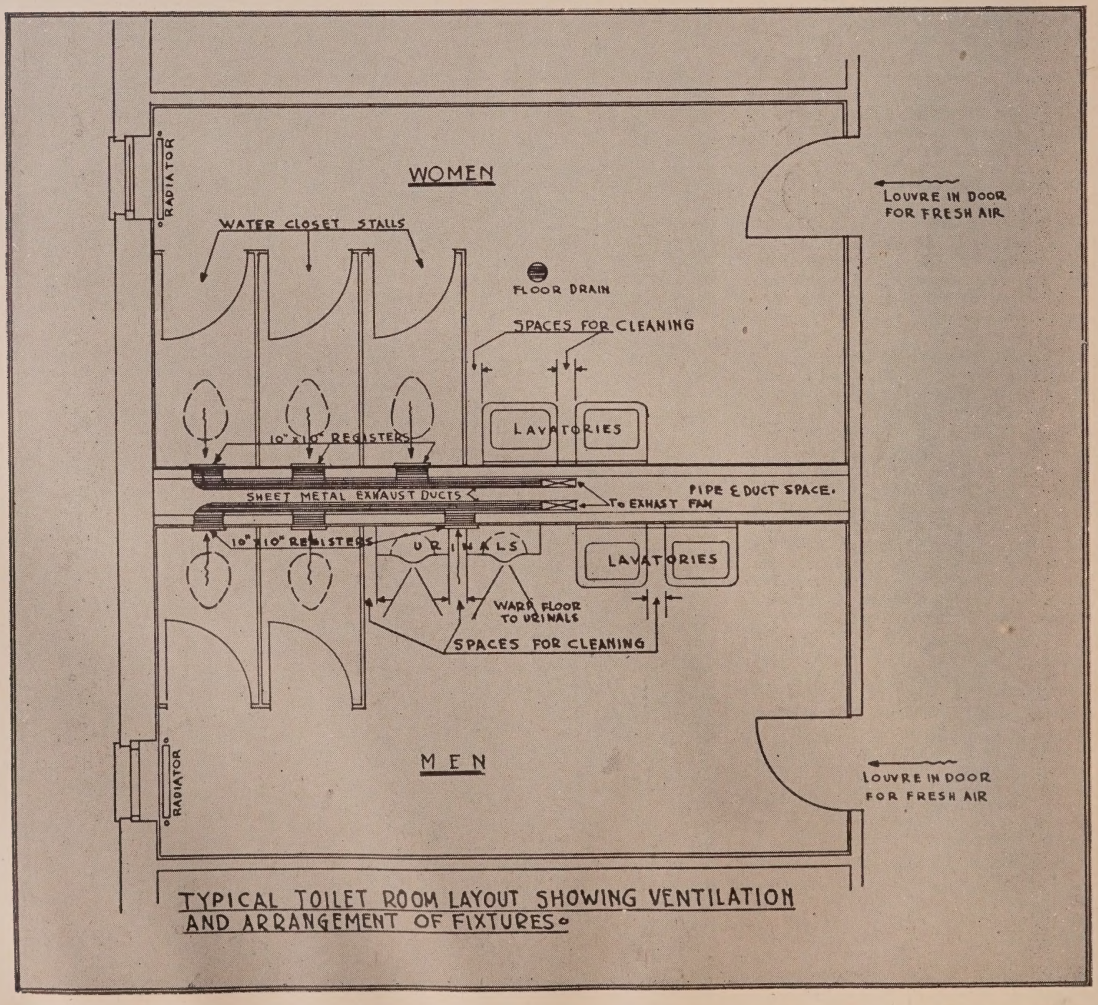
Some theatre operators prefer wall-type urinals over the floor type, but the latter are more sanitary, and eliminate the necessity of a floor drain which is required if the wall type is used. As suggested in the case of lavatories, urinals should be finished on the sides and should be set with at least a 2-inch space between each two.

Toilet Ventilation

Every toilet should, if possible, be provided with mechanical exhaust, entirely separated from the general ventilation system. (See Figure 1.)

Doors to toilets should be either undercut or be provided with louvers, to provide for air supply from adjoining spaces. If the theatre is air conditioned, this will provide for sufficient cooling for the toilets, and in any case will keep them fresh and odorless at all times. Exhaust registers should be located in the walls directly above each water closet, and each battery of urinals, and the exhaust system should provide for at least a 3-minute air change. Should the toilet rooms be located back to back with double wall between for pipes and ventilation ducts, a separate system of duct work should be installed for each toilet room to prevent the transfer of noises and conversation.

FIGURE 1—Typical toilet room layout, showing ventilation and arrangement of fixtures. Every toilet should, if possible, be provided with mechanical exhaust, entirely separated from the general ventilation system. Doors to toilets should either be undercut or provided with louvers to provide for air supply from adjoining spaces. If the theatre is air-conditioned, this will provide for sufficient cooling of the actual areas of the toilet rooms.



Pointers To Insure Long Carpet Wear

Construction, Underlining, and Installation Are Treated in Their Close Relationship to Use Life

By MERRILL A. WATSON
President, Carpet Institute, Inc.

As a basic part of theatre decor, carpeting can contribute much to a theatre's own special atmosphere. The soft floor covering should give patrons a sense of pleasure from its harmonious color combinations and pattern. Carpet should create an air of comfort, give an appearance of space, and serve as a "welcome" mat throughout the house. Not only does the theatre owner want the carpeting to enhance or preserve the individuality and comfort of his house, he also wants it to stand up as long as possible under the hard usage it will receive in any theatre.

BRIEF: *Theatre carpeting . . . unlike the universe . . . does not last forever . . . especially since it is called upon to bear more punishment than floor coverings in any other type of building . . . However battered and bruised it may be daily . . . by hundreds of tramping, scuffing, and wet feet . . . it still must look fresh and attractive for the next day's visitors . . . particularly because of the important role it often plays in the decorative scheme of the house.*

The problem of deriving the maximum wear from his carpeting . . . made all the more acute by the current increasing shortage of wool to fill new or replacement orders . . . is one of cardinal interest to every theatre operator . . . Much has been written about the proper care of carpets . . . when they are on the floor . . . but comparatively little has been said about prolonging use life before they are even laid . . . by the selection of properly constructed types . . . the employment of underlinings . . . and correct installation . . . The following article surveys these "life-giving" preliminary measures in detail.

It is a wise idea to consult the contract representatives of distributors or manufacturers. These men have had years of experience in dealing with every phase of contract installation. They can offer sound suggestions and discuss the owner's wishes and needs, budget limitations, and special traffic problems. Whether it is a complete theatre job or a replacement, the choice of carpet is one which deserves careful consideration.

CONSTRUCTION

Most theatre carpet comes from one of three looms: Chenille, Wilton or Velvet; these fine floor coverings are specially woven to withstand the heavy traffic in theatres. Chenille carpeting is usually custom-made, and any color or colors, pattern, size, or shape, no matter how irregular, can be loomed to specification. Furthermore, Chenille can be woven as wide as 30′ without a seam. The weaving of Chenille requires two looms with a hand-tufting operation on the second loom. The pile surface, woven on one loom, is cut into furry strips, and these strips are then woven into the base of the carpet on a second loom. The back of the carpet has a heavy, sturdy woolen yarn structure. It is a tough, wear-resisting weave.

Wilton is fine carpeting with a cut pile surface. Its twin weave is the Brussels, which is woven in the same manner, but the pile is left uncut. Sometimes cut and uncut pile are combined. In the Wilton weave, one set of woolen yarns forms the pile surface, and the other sets are woven into the base.

Velvet is the simplest of all weaves, loomed with one set of wool yarns with all the wool appearing in the surface. Before it is taken from the loom, the looped tufts are cut. The top-quality Velvets, such as those used in theatre installations, have a thick, luxurious pile.

Determining Quality

The pressure of human hands is useful in determining the quality of a wool floor covering. Density of the pile is an important factor in judging the durability of a carpet. The pile is the face of the carpet made up of tufts of woolen yarn held together by backing yarn. The denser the pile, the more it will resist any attempt with the thumb to make a dent in it. Quality wool has a springiness that lets it bounce back from pressure.

Carpet quality cannot be judged by depth of pile alone. It is necessary to know what constitutes the carpet, for there are some low-pile carpets which surpass the high-pile types, and there are texture weaves which combine both low and high tufts. Many rich-looking and long-wearing carpets are made up of several levels of tightly looped pile, and others are a combination of cut pile and looped pile. Pile height is, of course, a factor in judging quality, but it is not the sole decisive factor.

Several varieties of wool are required for carpet weaving. While the sheep born in the United States furnish fine wool for clothing, carpets require strong, tough, wear-resisting yarns made from wool grown on the sheep in cold mountainous countries. No one wool fiber has all the necessary characteristics for fine carpeting, but a judicious blending of wools achieves the best results. Carpet wools

UNDERLININGS ARE DESIRABLE because they save wear, prolong life, and make floor coverings look richer. Here illustrated is an installation man rolling out a section of Spongex Rubber lining.

are imported from India, China, Iraq, Tibet, Argentina, and Scotland. In those countries fleece grows long and tough, lustrous and springy.

Backing Yarns

Backing yarns are important to the lasting power of carpets. Backing yarns are used in three ways during the weaving process. First of all, a weft yarn, running across the carpet from selvage to selvage, serves as a filling to hold the pile tufts in place and with the fine chain ties the fabric together. The fine chain is a binding warp, running lengthwise and tying the filling yarns together. Lastly, a warp yarn, running lengthwise of the fabric, is a stuffer to add firmness and body to the carpet. The most common backing materials are cotton, jute, and kraftcord. Kraftcord, a man-made yarn, has proved itself to be tough, long-wearing, and is being used extensively. The uniform thickness of the yarns results in an improvement of the general appearance of the face of the carpeting, and the back has a more clean-cut and evenly defined appearance.

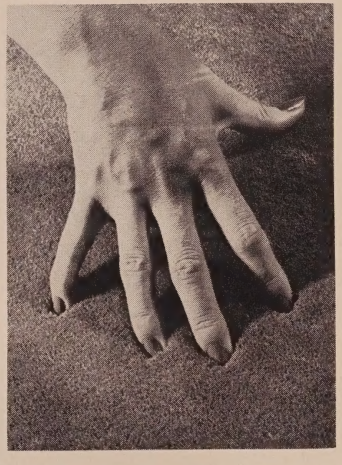
Other developments in carpet backing are adding greatly to the long life of carpeting. In one process, the pile yarns at the back are locked in by a plastic backing compound and securely fastened into the back of the carpet. A carpet made with this process is not bound, and it can be made over to fit different sized areas. It is cut and retaped, not sewn. Burned or damaged spots may be replaced. The spot is cut out, and a new piece, tufts, backing, etc., are inserted and taped to the back. In another process, a sponge rubber backing is blown into the carpet back. A rug lining is not necessary with this sponge rubber process. Among the advantages of these new backings are their non-matting, rot-proof, damp-proof, moth-proof, and dust-resisting qualities.

Man-Made Fibers

Today carpet manufacturers are giving increased attention to the use of various man-made fibers for soft floor coverings. These "chemifibers" are the result of many years of intensive research in the laboratory and have undergone countless tests for strength, durability, dirt-resistance and dye-fastness. Due to their whiteness, the fibers take dyes beautifully, and the colors are clear with a fresh, frosty appearance. The man-made fibers which are being used in soft floor coverings have been engineered specifically for carpets and are being used by themselves in carpet weaving, or in combination with wool yarns. Carpets woven with chemifibers can be cleaned by standard carpet cleaning methods, and shrinkage is minimal.

Color and Design Selection

Once the weave has been selected, the choice of color and design becomes the prime consideration, for carpet can act as a dramatic point of departure for the entire theatre decor, or it can be a subtle background for other color and decorative elements. In selecting a color it is well to bear in mind the fact that, no matter how careful a cleaning a carpet receives, the color will "gray down" after a few weeks of use. This is not



JUDGING A CARPET by (above) inspecting the sturdiness of the backing, the depth and thickness of the wool pile, and the feeling of density or body. A new development (below) in the form of "cushionloc" sponge rubber backing permits a closely joined seamless effect.

the fault of dyes in the wool yarns, but comes from the dust film which hangs over the cleanest of our cities. It is wise to choose a color that is a little more intense than the shade actually wanted. In view of the excellence of the dyes used by American carpet manufacturers today, carpet fading is virtually non-existent.

The pattern or design for carpeting will be determined by the effect desired in the theatre. Consultation with the contract representative of a distributor or manufacturer can be of great help. His experience in the field will enable him to suggest designs and color which can achieve the particular effect desired in the house in question. If the carpet is to function as the focal point in a severely plain architectural scheme, then a bold overscale pattern is the answer. Small figures, tone-on-tone, and textured carpets can give a note of informality in the intimate theatre, or act as a subtle background for warmly toned wall treatments and patterned drapery and upholstery fabrics in lobbies and lounges.

Long, straight lines, diamond patterns, and irregular wavy lines give an illusion of depth and space which can be used advantageously to enlarge an area. Warm colors give an air of warmth and welcome, while deep hot colors can give a dramatic feeling and add to the richness of the decor. Neutral and cool colors can be used as background where the main emphasis is on architectural elements.

UNDERLINING

Carpet underlining is an essential for theatre carpeting, unless, of course, a carpet with sponge rubber backing is used. Even then, underlining is desirable over stair treads and nosings to provide extra cushioning. Underlinings not only save wear and tear, prolonging the life of carpets, but they make the floor covering itself look richer. On concrete or marble floors, a carpet underlining saves the carpet from severe beating of heels above and the unyielding floor beneath. In addition, underlining keeps the pile from crushing and increases the effectiveness of vacuum cleaning by causing pockets of air which the machine draws through the fabric.

There are three types of underlining: all-hair; a combination of jute and hair; and sponge rubber. For theatre installations either the all-hair or sponge rubber underlining is recommended. In many instances, hair can be used in most parts of the theatre with the addition of one-half-inch thick sponge rubber strips over stair treads and nosings for added protection. Since jute is a plant fiber, it will eventually become flat and hard, thus making it a less durable choice for theatre installations.

All-Hair Type

One side of an all-hair underlining is waffled or ridged, while the other side is smooth. Between the two sides is an interlining consisting of burlap or cotton sheeting. Underlinings are made by "felting"; in other words, the fibers are not woven, but power-pressed together, as is hat felt or pool-table felt. An 86-ounce underlining is preferable for lobbies and stairs, but a 64-ounce under-

lining is satisfactory. The heavier the underlining, the more it contributes to the life of the floor covering. A hair underlining requires no care and involves no maintenance other than vacuuming, when the carpeting is taken up for any reason. All-hair underlinings are fire-retardant; they will char, but will not support flame. Underlinings are tacked on wood flooring and cemented to concrete or marble.

Sponge Rubber Type

Sponge rubber underlinings are available in 3/16, ¼, ⅜, and ½-inch thicknesses. For theatre use, the one-quarter inch is generally suggested for lobbies, foyers, and lounges, with the one-half inch thickness used on stairways and other areas which are subject to the heaviest traffic. The thicker the underlining, the longer the carpet will retain its looks and lasting power. Sponge rubber underlining, although more expensive, is notably long-lasting, and there is virtually no replacement problem with it. In turn, these underlinings increase the life of the carpet from 70 to 100 percent, according to tests performed on the National Bureau of Standards Carpet Wear Tester. Both moth and vermin-proof, these underlinings can be easily vacuumed or damp-wiped when the carpeting is taken up. Sponge rubber is both a sound and shock absorber, a factor of importance not only to the maintenance of carpet, but to the comfort of theatre patrons as well.

Each of the thicknesses comes in widths of 36 and 53 inches and is shipped in 60′ rolls. As far as installation goes, the widths are placed edge to edge and taped with waterproof industrial tape. The tape is carried around the ends of the widths and extended for an inch or two underneath. On inclines and stairways, the underlining will be prevented from "creeping" by spotting it to the floor with linoleum paste. Extra widths may be added by merely taping, or the width may be cut down by the use of scissors.

INSTALLATION

Since theatres have the smallest percentage of straight lines and level floors of any type of building, carpeting a theatre is the real test of a carpet layer's skill. Theatre traffic is about the heaviest to which any surface on which soft floor covering is laid is subjected, so not only must the carpet be selected with this in mind, but it must also be laid so that it will best withstand the hard wear it will receive. The finest quality carpet in the world can easily be spoiled by a poor installation job.

Preliminary Steps

When the carpeting has been selected, the installation man should be called in to go over the entire theatre before preparing an estimate. He must be told exactly which areas are to be carpeted, whether aisles are to be carpeted from chair standard to chair standard, whether broad marble steps are to be entirely carpeted or space left at the extreme sides, etc. Such specific information not only helps the installation man in making his estimate, but may save needless reordering and greater expense as well.

Before taking any measurements of the actual areas to be carpeted, the installation man should make an outline sketch of the actual floor areas, noting all defects and repairs which should be made to effect a first-class installation. He should take into account the construction of door saddles to determine whether the ends of the carpet breadths should be bound and turned under, allowing the carpet to be fastened tight up against the saddle, or whether they should be bound and a metal nosing strip installed to prevent the carpet raising above the saddle level. In planning the installation of carpet next to doors, it is extremely important to calculate both the depth of the carpet and the underlining to make sure that the door will clear both of them.

When the job layout is ready for preparation, a one-half inch-to-the-foot scale drawing should be made to show all offsets, curvatures, and slants of the floor areas to help solve all cutting, sewing, and matching problems. It also should allow for any errors or changes made before the carpet is bundled and shipped to the theatre. For balconies, aisles and cross-overs, not only a scale drawing, but the use of a beam-compass is essential. Exact yardage must be figured, for the slant of side walls and tapering of aisles make a great deal of difference in figuring and laying the breadths.

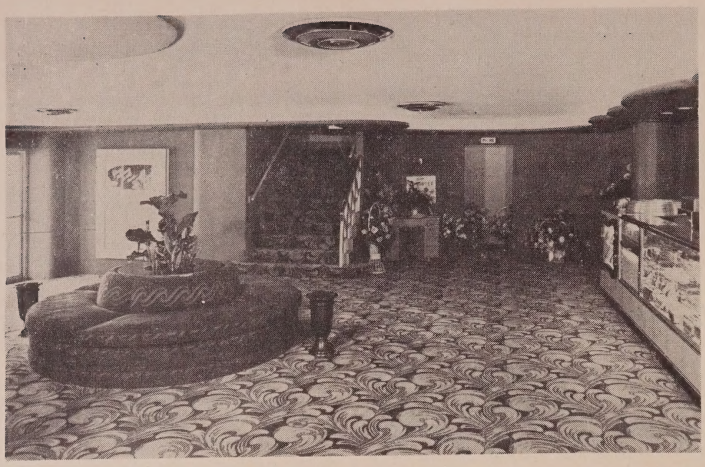
Planning the Breadths

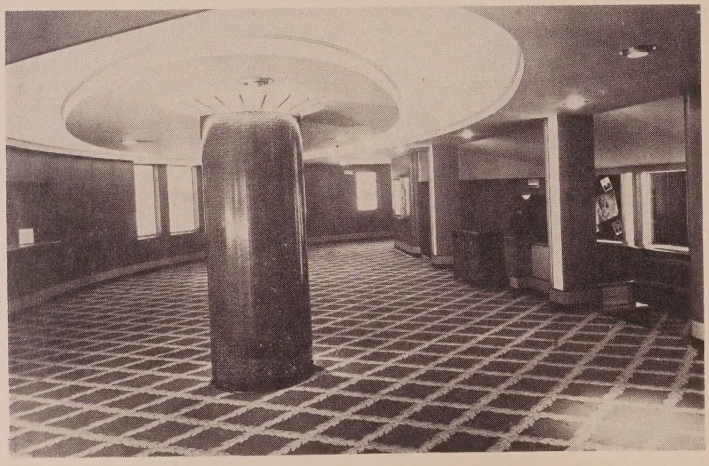
The breadths should always run in line with the most traffic and with the least amount of cross-seams in planning for carpeting. In the entrance vestibule, lobby or foyer, the breadths should always run from door saddle to door saddle. If it is necessary to waste a one-half breadth, it may be used along narrow side walls or side aisles. As far as standee areas are concerned, breadths should always run from the rear wall to the standee rail to avoid cross-seams at the head of the aisles or at the standee rail, and bad tripping accidents on the part of patrons in these heavy traffic areas. Still another reason for not laying carpet from side wall to side wall lies in the fact that when carpet does have to be replaced at aisle heads, only one or two short breadths will have to be installed. This same theory also applies to the aisle cross-overs and the front row of seats.

Stair Carpet Layout

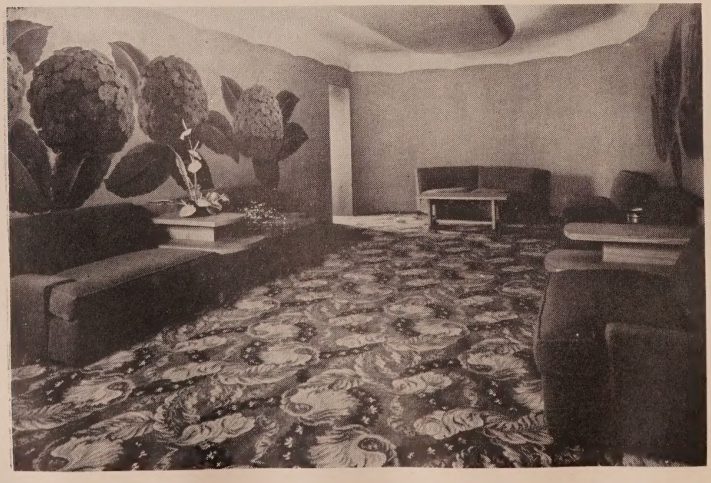
When planning the layout of the stair carpets, there should, if possible, be a continuous full breadth of carpet over treads and risers and then over the landing or hallways, so there will be no open seams to constitute a hazard. If this arrangement is not possible, the seam should come about half way up the riser so that there will be less wear and tear, and little chance of patrons catching their feet in the seam.

THE ACTUAL INSTALLATION of this Mohawk pattern in a theatre standee area nears completion with the capping of the bottom step. Special underlinings of the treads and stair edges have taken place.





DRAMATIC THEATRE CARPETING EFFECTS are not accidental. Top: A popular Alexander Smith design carries the main ornamental interest in the otherwise quietly modern lounge of the new Crest, Great Bend, Kansas. Center: A Gulistan diamond leaved pattern gives a feeling of great spaciousness in the semi-circular foyer of the Garland, Spokane, Washington. Bottom: Large decorative plumes of the Mohawk design share the ornamental accent in the lounge of the Gaylynn, Beaumont, Texas.



Figuring Underlining Yardage

The underlining yardage is figured by taking the total net carpet yardage, without allowance for matching or waste, multiplying it by 3, and then dividing by 4 to get the number of square yards of lining required. In re-carpeting jobs, new underlining is often necessary, for after long use linings tend to flatten out and may be damp and dirt-filled. Underlining should always be installed so that it is two inches inward from the carpet edges.

Providing Storage Space

Before a bundled roll of new carpet is shipped, steps should be taken to have adequate storage space set aside for it, for usually carpet will be the last item in a theatre installation. The storage space should be clean, dry, and large enough so that it will not have to be bent, an action which might well break its back. No girders, beams, or sharp instruments should be placed near the stored carpet.

Readying the Floor

When installation is to take place, the floor areas must be completely dry and thoroughly cleaned of all refuse, especially cement and plaster. A strong knife or cold chisel should be used to get the floor perfectly smooth and free. All surfaces should be checked to be sure that dampness cannot seep in, for dampness underneath can shorten the life of floor coverings appreciably.

Effects of Radiant Heating

Radiant heating is not harmful to wool carpet, according to studies made by the Carpet Institute. The insulating effect which soft floor coverings have on heated floor slabs is not great enough to put properly designed and installed systems off balance, and the temperature level at which these systems operate will have no damaging effect on the carpet. The possibility of enough moisture coming through the concrete to cause mildew development is negligible.

Other Considerations

Cigarettes may char carpet, but wool and chemifibers, such as hair underlining, are fire retardants, and, unless exposed to direct flame, the carpet will not burn. Air conditioning units need cause no carpet worries for the theatre owner. On the contrary, some moisture in the air is a tonic for carpet, for excessive dryness can dull a carpet's looks and reduce its resiliency.

Maintenance

Soft floor coverings should not prove a headache for the maintenance department, as both wool and chemifibers are high in dirt resistance. Day-to-day care and emergency first aid, in addition to regular annual or semi-annual professional cleaning, should keep theatre carpeting in fine shape for a long time.

The selection of quality carpeting, sturdy wear-resistant underlining, and a first-class installation job, plus conscientious daily care, will pay off in long carpet life. Carpet contributes to theatre appeal, and every house deserves the best in quality and maintenance.

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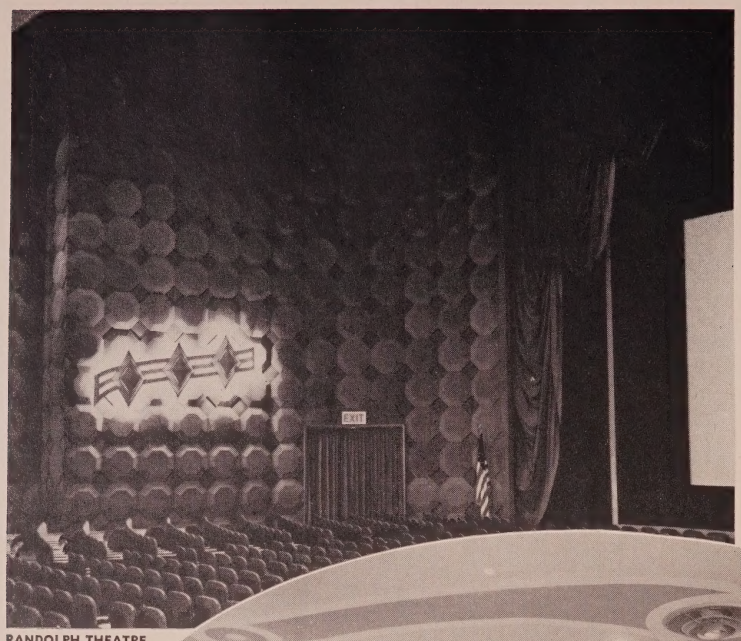

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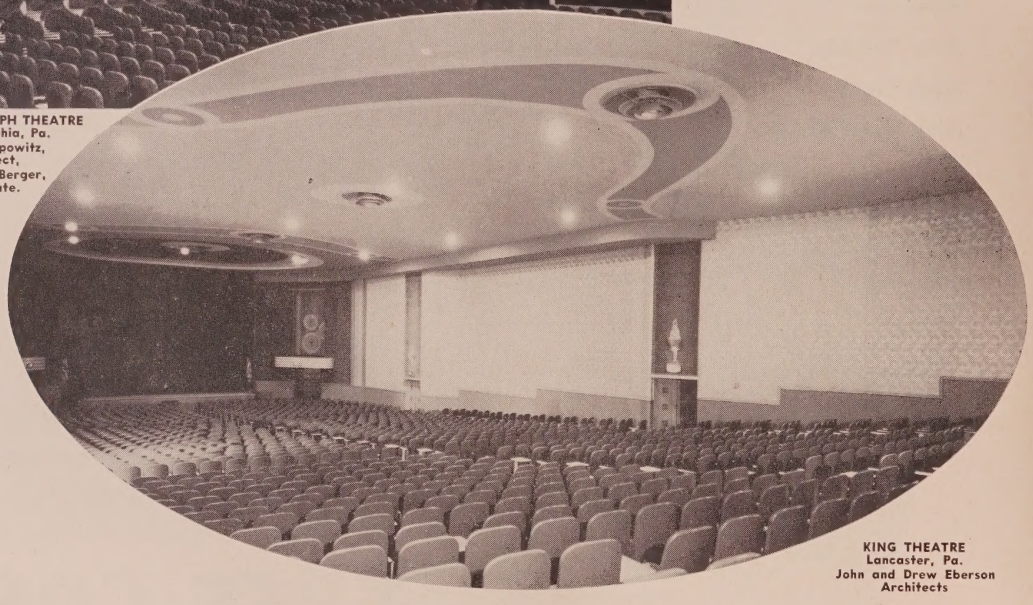

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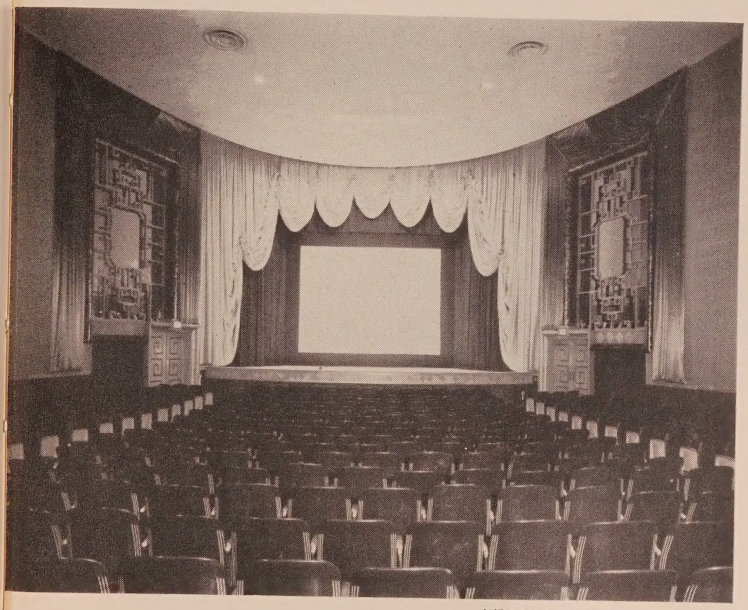

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Convention Hall, *Atlantic City, N. J.*
Public Auditorium, *Cleveland, Ohio*
Civic Auditorium, *Kalamazoo, Michigan*
Nathan Yamins Ct., *Fall River, Mass.*
Wisper & Wetsman Theatres, *Detroit, Mich.*
Shea's Buffalo Theatres, *Buffalo, N. Y.*
Randforce Amusement Co., *New York, N. Y.*
Brandt Circuit, *New York, N. Y.*
Weinstock Circuit, *New York, N. Y.*
Morris Mechanic Theatres, *Baltimore, Md.*
Keith-Albee Theatres, *Huntington, West Va.*
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Famous Players Canadian Corp., *Toronto, Canada*
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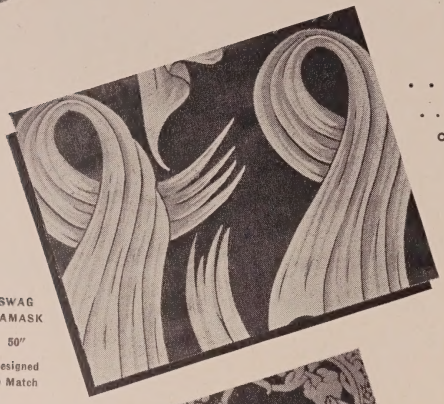

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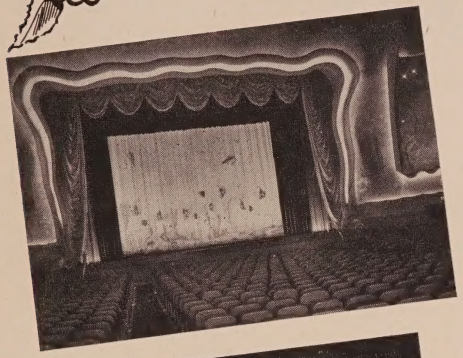
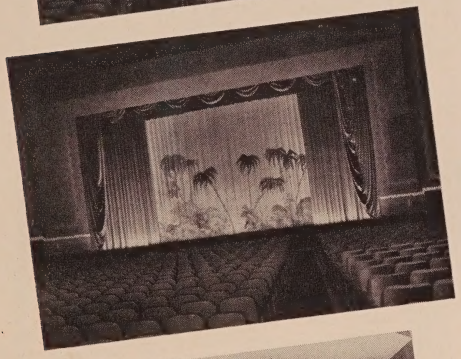
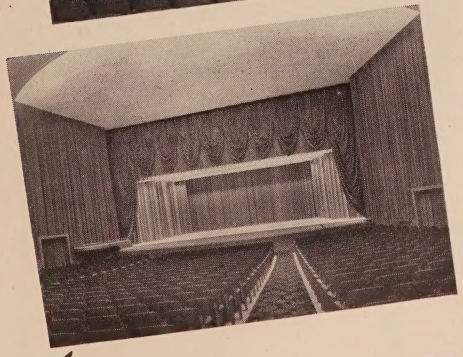
is original . . . an outstanding triumph in beauty and economy!







Shown are several recent jobs including Wometco's new Carib Theatre, Miami Beach, Florida. Examples of Knoxville's artistry.

KNOXVILLE'S COMPLETE DECORATING SERVICE

gives you the advantages afforded by the wide experience of qualified specialists in every line.

Let our design artists create for your theatre an atmosphere of luxury and splendor.

We invite you to consult us about the development of plans regardless of the size of your job.

Many redecorating jobs can be accomplished without interfering with the daily operation of your theatre. New life and charm can be put into old settings at surprisingly low cost.

KNOXVILLE SERVICE IS COMPLETE

DESIGN ENGINEERS • MANUFACTURERS
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- Contour curtains
- Fabric wall coverings
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- Painted murals
- Tufted panels
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- Spectacular effects in black lighting
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- Counterweight rigging
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A wide range of modern materials always in stock.

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KNOXVILLE Scenic Studios INC

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THE MOST MODERN STAGE EQUIPMENT STUDIO IN AMERICA

Fabrics

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THEATRE DRAPES
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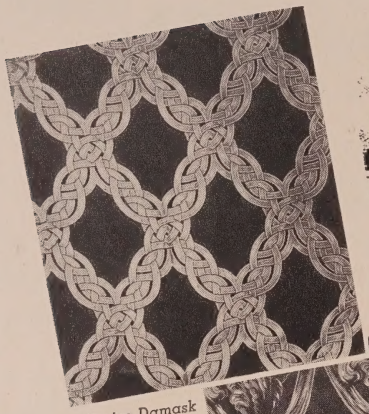
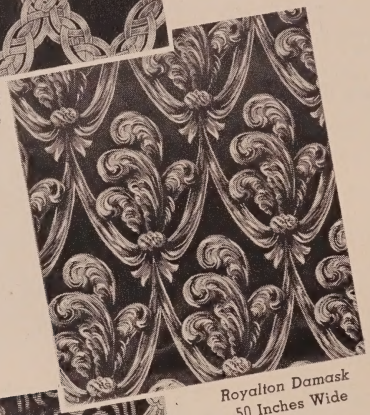


Venice Damask
50 Inches Wide



Royalton Damask
50 Inches Wide

Regent Damask
50 Inches Wide

FOR many years, America's leading theatre architects and scenic studios have recognized our organization as the prime source of supply for Decorative Fabrics. They know Maharam sets the pace in the creation of new and distinctive designs and weaves. In fact, we're boastfully proud of our ability to execute in fabric ***any*** theme of the designer or architect. So whether it be for a theatre, auditorium, ballroom, cocktail lounge or supper club, our complete line of Decorative Fabrics can fulfill your need.

Throughout this volume are shown several Maharam Fabric designs currently in use in America's newest DeLuxe theatres. On this page we present our Venice, Royalton and Regent Damasks—available in a full range of beautiful color combinations. These attractive Damasks have been designed and created for theatre wall coverings and stage draperies.

For samples or further information, consult your architect, decorator or nearest Maharam Branch.

Maharam Fabrics Include:

DAMASKS, VELOURS, PLUSHES, METALLIC CLOTHS, REPPS, FIBRE GLASS CLOTHS, SATINS, MODERN PRINTS, LEATHERETTES AND AN EFFECTIVE RANGE OF LOBBY DECORATIVE ITEMS.

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FABRIC CORPORATION.

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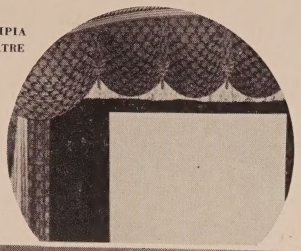
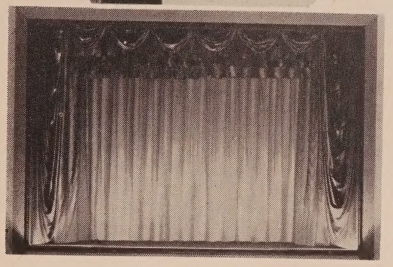
OLYMPIA THEATRE





DE KALB THEATRE

Hubert Mitchell Industries PRESENTS a complete line of stage equipment—with an enviable reputation built up over a period of twenty years for fair prices, quality products and speed of delivery to any point in the United States.

CURTAINS AND DRAPES: Before the curtain rises, the audience's first impression is the curtain itself. Therefore, we exercise the utmost care in producing the highest quality drapery for theatre stages, designed in good taste. A wide variety of designs, colors and fabrics is available, at reasonable cost.

STAGE LIGHTING: Lights bring the theatre stage to life. HUBERT MITCHELL INDUSTRIES offer a wide selection of lighting equipment from Baby Spots to Giant Floodlights. If your budget does not allow the purchase of a complete set of lighting equipment at one time, we will gladly help in planning the order of your purchases to give best possible stage lighting in the interim.

STAGE HARDWARE: To help each stage performance to run smoothly, with minimum time and effort required for curtain-risings and lowerings, HUBERT MITCHELL INDUSTRIES supplies stage hardware and curtain tracks that have been proven dependable during its more than twenty years of service. State requirements invariably present individual problems. For the answers to your stage equipment problems, contact us or our representative in your area. The services of our experienced personnel can be of great aid to you in planning your requirements so as to receive the most from your budget.

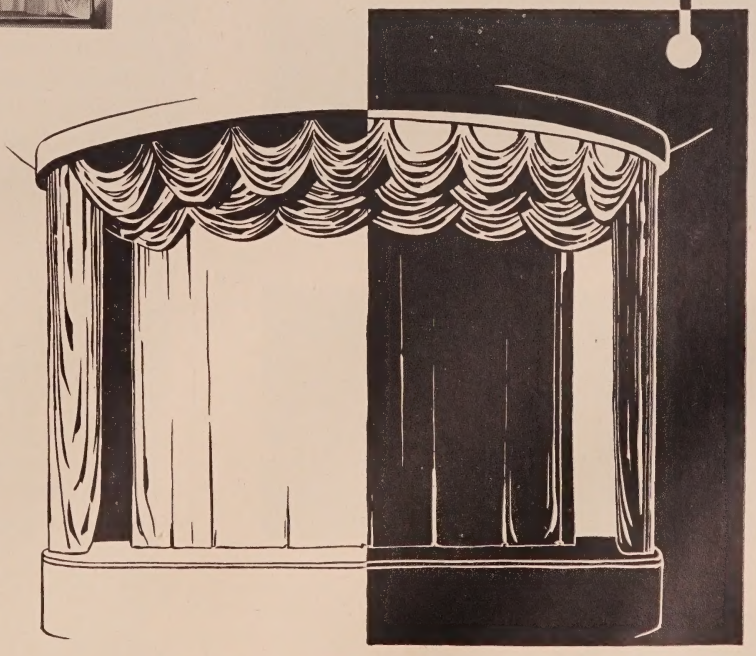
Items We Manufacture and Sell

1. Stage Curtains
2. Contour Curtains
3. Screen Curtains
4. Theatre Drapes
5. Stage Lighting and Dimmers
6. Steel Track
7. Curtain Machines
8. Wall Fabrics
9. Murals
10. Theatre Decorations
11. Rigging

Theatre Consultation Service

Our Theatre and Electrical Engineering Consultation staff is at your service. We will design, engineer, manufacture and install your stage lighting, switchboard, dimmers, Contour Curtain equipment, Asbestos Curtains and rigging. Our consultant has had years of experience in stage designing. He has been a consultant for numerous architects in the North and East who confine their work to the theatre.

The Haven Theatre at Brookhaven, Mississippi is a very unique theatre. The general prospective of this stage is based on a snared drum about one half oval. This curtain is a contour type curtain which follows the contour of the stage and is operated up and down rather than the old conventional way of from side to side. When the front curtain is raised it forms a festoon effect valance. The ceiling borders also follow the contour of the ceiling, the same effect was accomplished on the screen curtain which is also a contour curtain. This owner came to us with his problem after consulting with other Scenic Studios. Our engineering staff solved his problem as shown in the photograph at the right.



HAVEN THEATRE, BROOKHAVEN, MISS.

COMPLETE STAGE EQUIPMENT — HUBERT MITCHELL Industries — HARTSELLE ALABAMA

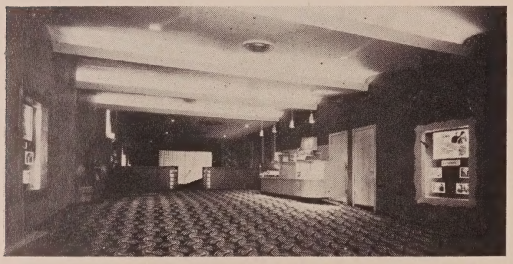
WRITE FOR COMPLETE BOOKLET

HUBERT MITCHELL INDUSTRIES

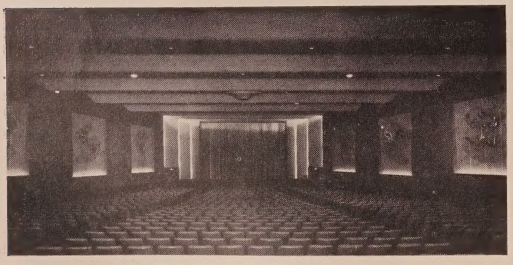
HARTSELLE, ALABAMA

IS YOUR THEATRE BETTER THAN IT WAS LAST YEAR?

PLAZA THEATRE, Washington, D. C.



NEW MAYFAIR THEATRE, Philadelphia, Pa.



NORTHWOOD THEATRE, Baltimore, Md.

We are proud to point out that four of the five theatres in our operating area to receive the "Annual Merit Award" for general excellence were decorated by The Paramount Decorating Company. This plaque constitutes a "Good Theatre Seal of Approval" from the Editorial Board of Specialists of THEATRE CATALOG.

★

If it isn't . . . now is the time to do something about it. Excellent as a picture may be, unless presented in a favorable atmosphere, you run the risk of playing to a shrinking audience.

★

1290 theatres up and down the East Coast are better because of the knowledge, ability and craftsmanship of the Paramount organization. Each has been studied as a separate and distinct decorative problem. Each has received the benefit of the "know-how," "know-what" and "know-theatre" of an organization that has specialized in theatre decoration for 26 years.

★

Whether it's a new theatre or an old one you want to look like new . . . why not let us tell you which of our 1290 is in your area . . . and go see it. That's the way to judge both quality and value. We will be happy to serve you. And remember, Paramount always keeps in mind the exhibitor's budget.

PAINTING MURALS DECORATING

STAGE SETTINGS WALL COVERINGS

PARAMOUNT DECORATING CO., INC.

311 N. 13th STREET • PHILADELPHIA 7, PA.

the IDEAL dimmer for HIGH POWER

VARIAC® . . . the original continuously-adjustable autotransformer . . . is widely accepted as the ideal dimmer for theater lighting. Unlike the resistive type of control, the VARIAC provides perfectly smooth variation in voltage from zero to full output with negligible power loss and resulting heat.

With the Type 50-A or Type 50-B VARIAC, large currents can be handled safely and conveniently. The Type 50-A is rated at 5 kva; its rated output current is 40 amperes with a maximum of 45; its output voltage is continuously adjustable from zero to a maximum of either 115 or 135 volts, from a 115-volt line. **Type 50-A. Price: $140.**

The Type 50-B, designed for 230-volt input, may be used on a 115-volt line. With 230 volts input it is rated at 7 kva with a rated current of 20 amperes and a maximum of 31. With 115-volt input the ratings are reduced to one-half of these values. The output voltages obtained are either zero to 270 or zero to 230 volts. **Type 50-B. Price: $140.**

Two Type 50-A's, ganged with their windings in parallel and with suitable choke are rated at 10 kva with rated and maximum currents of 80 and 90 amperes. The ganged assembly is the **Type 50-AG2. Price: $310. Type 50-P1 Choke: $10.**

Two Type 50-B's when similarly used on 230 volts are rated at 14 kva with 42 and 62 ampere current ratings. This assembly is the **Type 50-BG2. Price: $310. Type 50-P1 Choke: $10.**

With two or three Type 50 VARIACS a number of three-phase connections are possible. Various powers up to 25 kva can be handled.

VARIACS are made in a number of sizes from 170 va up. They are efficient, economical in use, convenient to install and have very long life.

For Complete Information Write for the VARIAC BULLETIN

GENERAL RADIO COMPANY

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For complete, instant control of lighting intensity...

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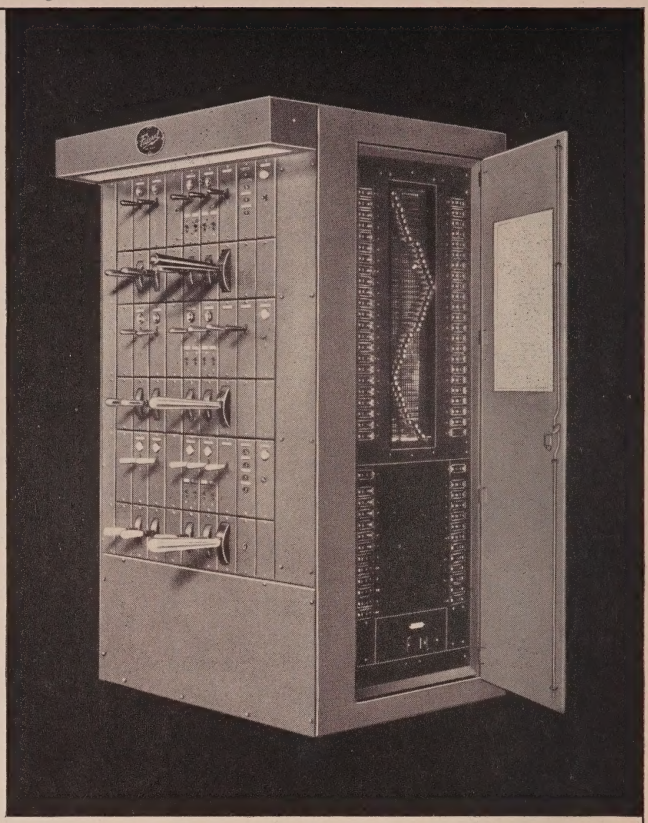


"FLEXI" PILOT and DIMMER CONTROL

SPACE-SAVING design... controls and circuit protection equipment in one compact enclosure! Complete flexibility of light adjustment! Smooth, flickerless dimming! Maximum reduction of electrical losses! These are some of the reasons why the Federal Noark Flexi Pilot and Dimmer is being more and more widely adopted the country over.

The Federal Noark Flexi Pilot and Dimmer Control uses auto-transformer type dimmers which vary voltage to change lighting intensity... never wastes current by boosting resistance. It dims individual lights or any combination of circuits... permits the setting up of desired lighting effects in advance of requirements.

In motion picture and legitimate theatres, night clubs, auditoriums and stages of schools and colleges —everywhere, in fact, where lighting effects must be controlled and regulated—the Federal Noark Flexi Pilot and Dimmer Control brings outstanding efficiency and economy. Write for complete information.

FEDERAL ELECTRIC PRODUCTS COMPANY

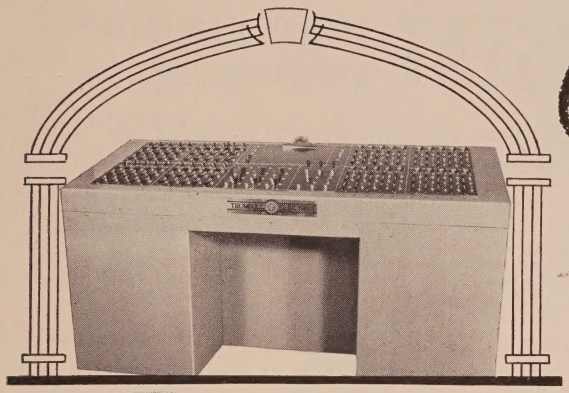
50 PARIS STREET
NEWARK, NEW JERSEY

REPRESENTATIVES
IN PRINCIPAL CITIES

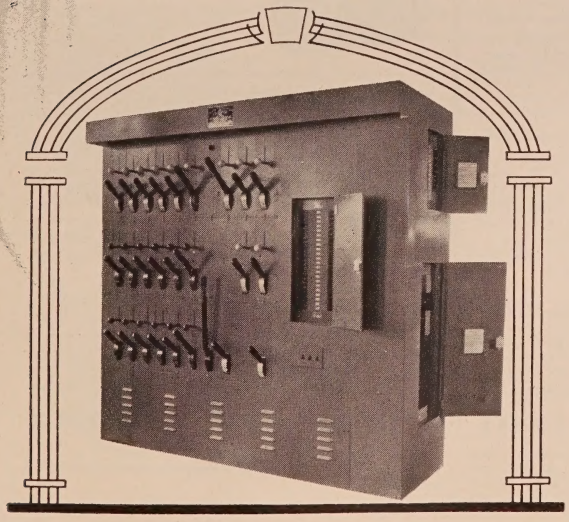
BALANCED LIGHTING EFFECTS

with Trumbull's **Controlite**

—a combined switchboard and dimmer bank



Desk type pilot board operates, by remote control, larger main switchboard placed elsewhere where there is more room. Board shown employs electronic control dimming.



Autrastat Controlite comprises dimmer, switches, circuit protection equipment, completely interconnected with all internal wiring in place, needing only connection to branch circuit terminals and main feeder lugs.

Economical operation. No heat dissipation with improved Autrastat dimmer control, which *varies voltage* by transformer action, instead of inserting resistance . . . saves on power consumption.

Ease of control. Dim lights individually or in combinations. Fingertip control switches make the set-up quickly. Can pre-set lights to set up scene in advance on Controlite board. (Pre-set type.)

Compact design. Switching, dimming and circuit protection equipment all in one compact enclosure.

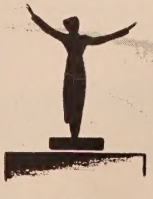
Flexible arrangement. Controlite is made to customer's specification—big or small, simple or complex.

Three types. Resistance—resistance dimmer plates. Autrastat—auto-transformer type. Electronic—incorporates pre-set dimming.

Uses. Auditoriums, theatres, churches, schools, lodges, clubs, show windows, fountains, stadiums.

Top-notch engineering. Benefit from the complete engineering service of one of the largest suppliers of theatre lighting control equipment.

For more information, contact nearest Trumbull office or distributor.



TRUMBULL ELECTRIC

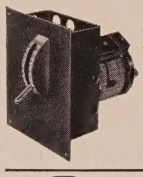
Plainville, Connecticut

MAKE YOUR THEATRE LIGHTING *Extraordinary* WITH POWERSTAT LIGHT DIMMING EQUIPMENT

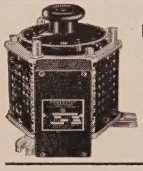
Yes — POWERSTAT Light Dimming Equipment can lift your lighting installation out of the "ordinary" class; can make your lighting work for you — to give you maximum performance at all times.

When you can dim, brighten and blend your house, proscenium, lobby and stage lighting, you add to the system the flexibility it needs to make more money for you. You'll get added use, for instance, as an "off hour" place of assembly for a wide range of community affairs — charity drives, rallies, lodges, clubs and other organizations will use your theatre when it's equipped with POWERSTAT Light Dimming Equipment to meet each of their varied needs.

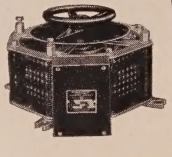
POWERSTAT Light Dimming Equipment is economical to install — in new or old building. Its cool, efficient, power-saving operation will cost you much less than ordinary dimming equipment. It handles incandescent and cold cathode lighting with equal ease and efficiency — *steplessly* dimming, brightening or blending either, from full-on to blackout . . . *smoothly*, to contribute effectively to patron comfort and safety. It will pay you to investigate POWERSTAT Light Dimming Equipment for your theatre — whether you're remodeling, renovating or building a new plant.



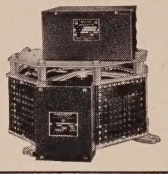
POWERSTAT Dimmer D1000H is the only unit of its size with a vertically-operated handle and graduated drum markings. It is compact — 7" x 8½" — can be mounted in existing switchboards or control panels to handle single circuits rated up to 1000 watts.



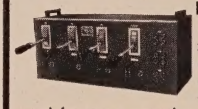
POWERSTAT Dimmer D2000 is hand-operated, non-interlocking, to control lighting installations where single circuit dimming is required. It's rated at 120 volts, 50/60 cycle, single phase; has an output of 0 to 2000 watts.



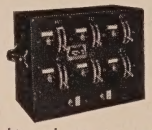
POWERSTAT Dimmer D5000 is a heavy duty, hand-operated unit. It's rated at 115 volts, 50/60 cycle, with an output of 0 to 5000 watts. For multi-circuit control or for ratings up to 30,000 watts output, this unit can be mounted in tandem or "ganged" in assemblies of three dimmers, operating from a common control shaft.



POWERSTAT Dimmer DM5000 is a motor-driven adaptation of D5000. It can be operated by pushbutton or positioner — from one or several remotely-located stations. It's rated the same as D5000; has the added advantages of pushbutton dimming outlined below.



POWERSTAT Dimmer DBP3-2000 is a handy "packaged" model. It's a 3-circuit unit, each dimmer having an output of 0 to 2000 watts. Each can be operated independently or can be interlocked to a master control for group operation. It's easy to install, easy to operate and can be moved from one location to another for maximum flexibility.



POWERSTAT Dimmer DBR6-1000 is a "package" consisting of six 0-to-1000-watt non-interlocking dimmers in one compact case, each protected by a separate fuse; with individual "off-on" switches, indicating lights and output receptacles. Gives "big switchboard" performance in a portable, "packaged" unit.

POWERSTAT *Motor-Driven* DIMMERS FOR YOUR CONVENIENCE

The push of a button or the flick of a switch can control your house, stage or lobby lighting — from one or any of several remotely-located stations in your theatre. Motor drive adds convenience to your POWERSTAT Dimming Equipment — gives it *extra* efficiency and flexibility. Manager, projectionist, head usher or other official can brighten or dim houselights or other circuits — instantly and easily, from blackout to full-on, when motor-driven POWERSTAT Dimmers are installed in your theatre.

ALL POWERSTAT DIMMERS GIVE YOU THESE *Extraordinary* FEATURES

Control of any number of lamps up to rated capacity. One, two or any number of lamps operated without affecting brilliancy of individual lamps or entire lamp load • Blackout to full-on achieved regardless of number of lamps in circuit • Cool operation • No wasted wattage • Simple installation and operation.

This booklet contains information that will help you choose the type and size POWERSTAT Dimmer for your theatre. Write for a free copy today. 8100 Demers Avenue, Bristol, Connecticut

THE SUPERIOR ELECTRIC CO.
BRISTOL, CONNECTICUT

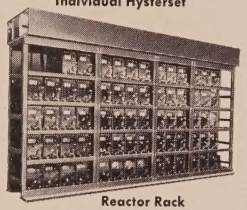
POWERSTAT VARIABLE TRANSFORMERS • VOLTBOX A-C POWER SUPPLIES • STABILINE VOLTAGE REGULATORS

The COMPLETE Line of Dimmer Controls

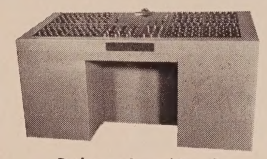
Your surest source of the correct dimming equipment for any type of theatre, auditorium, hall, etc., is Ward Leonard, the *only* manufacturer offering all types of control—reactance, resistance and autotransformer, both manual and remote.

Ward Leonard's engineering department will be glad to furnish recommendations or specifications. Send complete information about your installation problem.

Individual Hysterset



Reactor Rack



Desk-type Control Board

REACTANCE TYPE

WARD LEONARD'S *HYSTERSET*

New electronic circuits, using small current values and miniature control devices, permit grouping many dimming and switching controls into one control board for one-man operation.

Single rectifier tube per circuit reduces upkeep to a minimum.

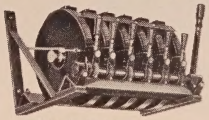
Various circuits can be interlocked electronically for group master or grand master control from a single operating lever. Pre-set control permits pre-selection of two or more lighting combinations or scenes in advance. Wide range—standard design is suitable for 20% to 100% dimmer rating.

Response to the pilot control is instantaneous for quick blackouts or immediate brightening.

Bulletin 74.

RESISTANCE TYPE

Enclosed Form 39 dimmer bank, using Vitrohm interlocking dimmers.



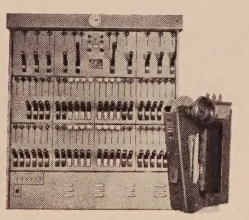
RD interlocking dimmer.

SRD non-interlocking dimmer.

WARD LEONARD'S *VITROHM.* Inexpensive assemblies for small theatres and schools provide low-cost, flickerless dimming.

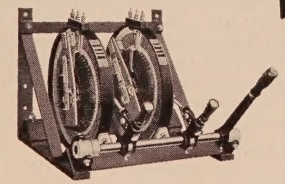
Type SRD—non-interlocking. Single or multi-plate assemblies. *Bulletin 71.*

Type RD—interlocking, for flexibility of control. 110 steps of control. *Bulletin 72.*



Autrastat dimmers—composite switchboard and dimmer bank.

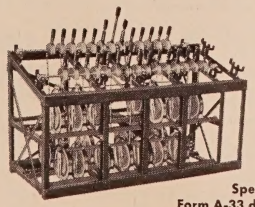
AUTOTRANSFORMER TYPE



Radiastat dimmer bank.

WARD LEONARD'S *AUTRASTAT* AND *RADIASTAT.* *Radiastat* (radial type)—5500 and 8000 watts 120 volts AC. The foolproof, maintenance-free autotransformer dimmer. 115 large brass contact segments and multiple silver alloy contact shoes give positive contact for large-capacity loads. *Bulletin 76.*

Autrastat (rectangular type)—4000 watts 120 volts AC. Metallic contacts to withstand high inrush current of large incandescent lamps. *Bulletin 76.*



Special Form A-33 dimmer bank designed for bench-type composite bank and switchboard.

REMOTE CONTROL

Remote operation of resistance, Autrastat or Radiastat dimmers with Motorlite or Regulite control systems are excellent for installation requiring control from projection booths.

WARD LEONARD

Result-Engineered Controls

WARD LEONARD ELECTRIC COMPANY

86 South Street, Mount Vernon, N. Y. Offices in all principal cities of U. S. and Canada

Relays • Resistors • Rheostats • Control Devices

Don't Worry about . . .

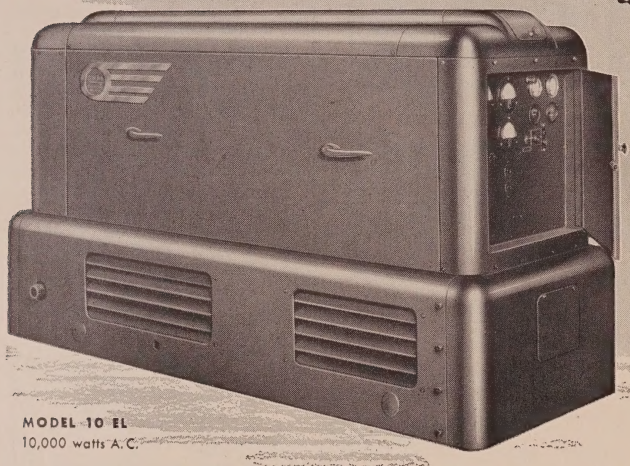
POWER SHORTAGES

Low Voltage

Power Conservation Orders

HIGHLINE FAILURES

DIMOUTS



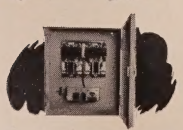
MODEL 10 EL
10,000 watts A.C.

Avoid Refunds and Shutdowns with ONAN STANDBY ELECTRIC POWER!

Proved Dependable in Thousands of Installations
Theaters, hospitals, radio stations and other businesses in every part of the country rely on Onan Standby Plants for uninterrupted power.

Provides Power for all Electrical Equipment
With an Onan Standby Plant even the popcorn machine keeps going during an emergency. Power is supplied for projectors, signs, heating and ventilating systems.

Approved by the Pennsylvania State Industrial Board
The rigid requirements for standby systems as outlined in Pennsylvania's Panic Law are met in detail by Onan Standby Plants.



Takes Over the Power Load Within Seconds, Automatically!
When power fails *for any reason,* the Onan Automatic Standby Plant starts itself, runs for the duration of the emergency and stops when commercial power is restored.

You are protected against any power interruption or restriction on your use of electricity with an Onan Standby Plant. In case of power failure the Onan Emergency Electric Plant takes over the entire power load within seconds *automatically* and the show goes on! During periods when power use is curtailed, just switch to your Onan Plant and use all the current you need for normal operation of your theater.

An Onan Electric Plant is low in cost and installation is simple. Ruggedly-built and dependable, they require very little attention or maintenance. Send coupon below for complete information on how you can be protected against any interruption of electrical service.

ONAN STANDBY ELECTRIC PLANTS—1,000 to 35,000 watts A.C., all standard voltages, 50 or 60-cycle. 25-cycle plants available in 3,000 to 25,000-watt capacities. Three-phase for units 3,000 watts or larger.

Write for* FREE *Folder

Contains specifications of Onan Emergency Plants. Helps you choose the right size and type.

ONAN STANDBY POWER

D. W. ONAN & SONS INC.
2406 Royalston Ave., Minneapolis 5, Minnesota

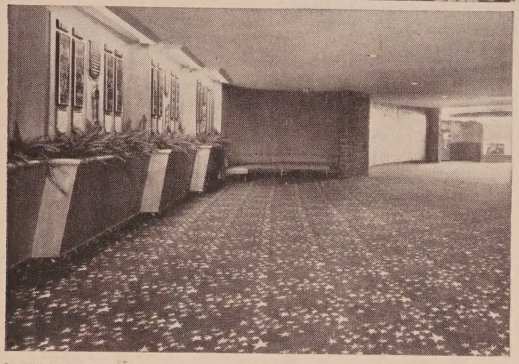
Please send me details of Onan Standby Electric Systems for theaters.

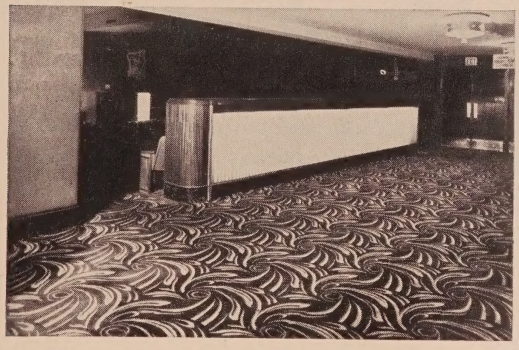
Onan PRODUCTS

NAME_____

STREET_____

CITY_____ STATE_____





The Mohawk Theatre, Amsterdam, New York
The Paradise Theatre, Los Angeles, California
The Tower Theatre, Waterbury, Connecticut

For comfort underfoot—

For sound carpet economy—

SPONGEX

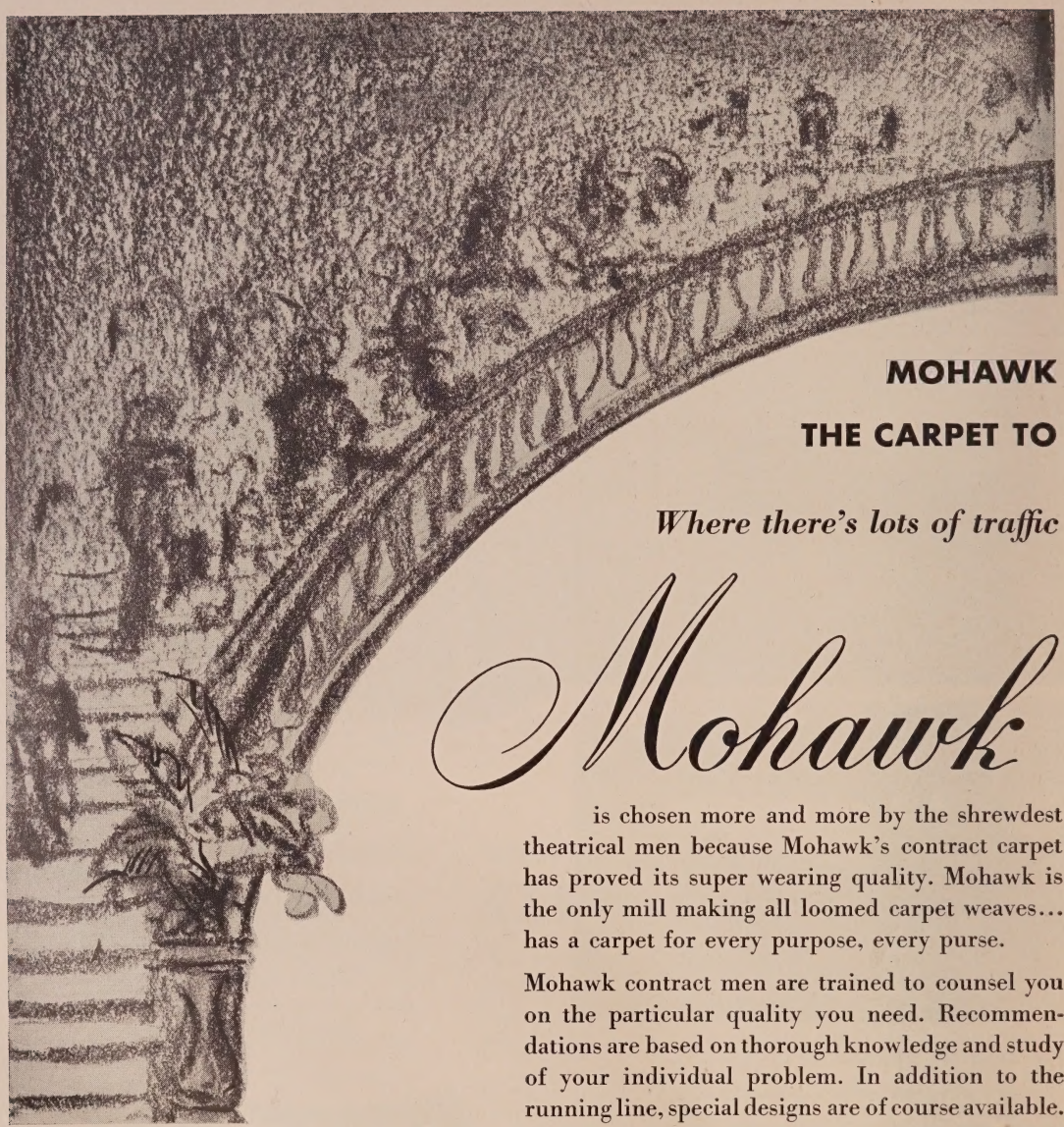
the sponge rubber rug cushion

Any carpet cushioned on Spongex* will wear more than twice as long, yet Spongex itself stays fresh and resilient under carpet after carpet. Your patrons will appreciate the finest in comfort underfoot and the atmosphere of luxuriousness—you will appreciate the sound economy of Spongex.

*Source: U. S. Testing Company, Inc., test No. 22570, October 3, 1950, reported Spongex increased abrasion resistance 173%. This test and E1185 reveal SPONGEX to be superior to all other rug cushions in retention of resiliency after aging and compression.

makes any carpet luxury carpet • sheds no loose hair or fibers • cleans easily with vacuum • lasts year after year under rug after rug • is moth and vermin proof • non-allergenic.

THE SPONGE RUBBER PRODUCTS COMPANY • 466 DERBY PLACE, SHELTON, CONNECTICUT



MOHAWK

THE CARPET TO

Where there's lots of traffic

Mohawk

is chosen more and more by the shrewdest theatrical men because Mohawk's contract carpet has proved its super wearing quality. Mohawk is the only mill making all loomed carpet weaves... has a carpet for every purpose, every purse.

Mohawk contract men are trained to counsel you on the particular quality you need. Recommendations are based on thorough knowledge and study of your individual problem. In addition to the running line, special designs are of course available.

Saxony, MS–191

Saxony, MS–192

New Huntleigh, HH–40A

BUILDS

TAKE THE WEAR

...there's lots of Mohawk

Carpet

Carpet Craftsmanship
FROM THE LOOMS OF
Mohawk

MOHAWK
CARPET MILLS, INC.
295 FIFTH AVENUE, NEW YORK

Place your order early with your Mohawk contract dealer or write us for nearest Mohawk dealer's name.

New Huntleigh, HH–54A

New Morleigh, ML–61A

New Morleigh, ML–64A

Baldwin Hills Theatre, Los Angeles, Cal.

To improve your box-office throughout the year
improve the looks of your lobby today

Business is on the carpet and carpet is our business

Handsome, soundless carpet can improve the looks of your lobby quicker than any other single thing. Your local Alexander Smith-Masland carpet contractor is a theatre carpet specialist. Let him show you the new weaves, colors, patterns, and qualities. Let him suggest the carpet that will look smartest and wear best at the price you want to pay. Let him estimate the cost of carpeting your aisles, powder rooms, and smoking rooms, as well as your lobby. Let his experience save your time and money.

Sutton Theatre, New York, N. Y.

Phone the Alexander Smith-Masland contractor in your city, today.
Or write our Contract Department, 295 Fifth Avenue, New York City.

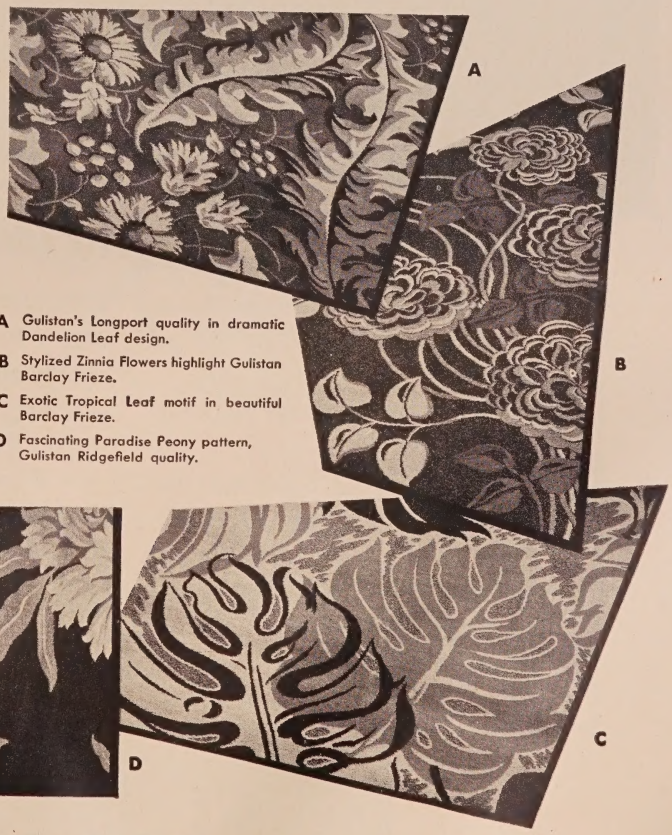
ONE WAY TO START TRAFFIC TO YOUR *theatre*

Make your theatre the place where people are proud to be seen . . . delighted to meet their friends.

To meet today's competition, you must draw your customers from the comfort of their own cozy firesides. Today *more than ever before* your theatre must excel not only in choice entertainment but in convenience, in charm, in style and beauty of decoration.

To start lines forming at the boxoffice, start your decorative plan with carpet. Like many successful operators, you may find that a good decorating job based on the right carpet can change your business outlook from dead end to busy thoroughfare.

Your Gulistan supplier can help you choose carpet to give your theatre the certain distinction —the extra luxury—that attracts customers *again* and *again*. Why not see him today?



A Gulistan's Longport quality in dramatic Dandelion Leaf design.

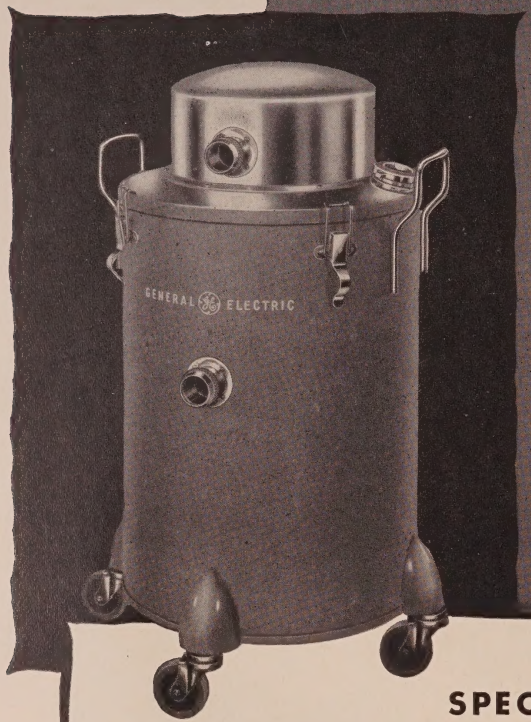
B Stylized Zinnia Flowers highlight Gulistan Barclay Frieze.

C Exotic Tropical Leaf motif in beautiful Barclay Frieze.

D Fascinating Paradise Peony pattern, Gulistan Ridgefield quality.

GULISTAN CARPET

WOVEN ON POWER LOOMS IN THE U. S. A. • A. & M. KARAGHEUSIAN INC. • 295 FIFTH AVENUE, NEW YORK 16, N. Y.



HEAVY-DUTY CLEANER

Model AVI-901

WET or DRY PICK-UP

SPECIFICATIONS

MOTOR—G-E—1 horsepower rating . . . a-c/d-c . . . ball bearings—packed in lubricant.

VACUUM—59 in. average maximum water lift (115 V).

AIR FLOW—73.5 cubic feet per minute.

CORD—35 feet heavy-duty, all rubber cord with molded plug.

CASTERS—Soft rubber tread—ball bearing swivel.

CONTAINER—13 gals. liquid capacity—1¼ bushels dry dirt capacity.

FILTERING AREA—1060 sq. inches.

PROTECTOR FUSE—Prevents liquids from damaging motor when used as wet pickup.

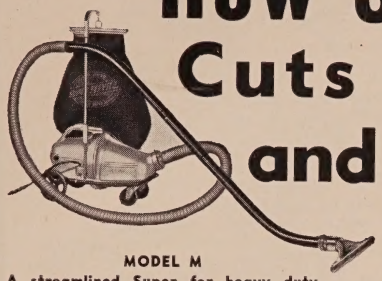
DIMENSIONS—Height 35¼ inches—diameter 20½ inches.

WEIGHT—68 pounds.

FINISH—Durable, baked-on metallic grey finish. Polished chrome trim.

GENERAL ELECTRIC

How SUPER CLEANING Cuts Operating Cost and Builds "Box Office"



MODEL M
A streamlined Super for heavy duty use. Light weight, ready portability, simple operation. A safety trap catches metal and other solid objects picked up by the floor tool, without damage to fan or motor.

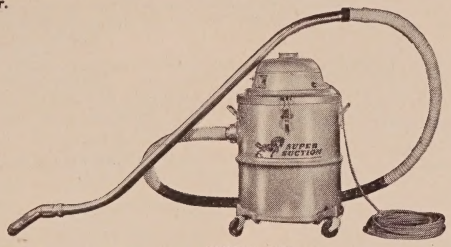
SAVES LABOR—SAVES TIME—REDUCES FATIGUE . . .

Any one of the three Specialized Super Theatre Cleaners will give your theatre the clean comfort your most fastidious patron enjoys at home. Clean, attractive interiors are part of the window dressing of the theatre business, bringing more patronage to concession counters and box office.

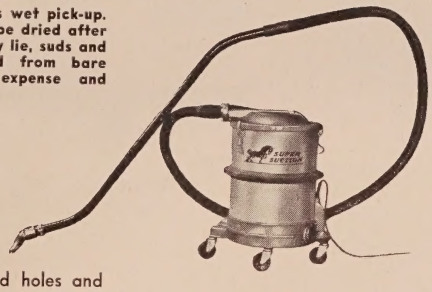
The Super cuts down cost of labor and time required. Daily cleaning with a Super eliminates frequent scrubbing and housecleaning necessary with less efficient and ordinary methods. It's been proven that the reduction in fatigue by using Supers leaves energy available for other duties.

Super cleaning prolongs the life of furnishings, ornamentation and equipment. Efficient tools enable the operator to clean all surfaces; floors, walls, screen, drapes, overhead ledges, without ladders or scaffolds.

Choose the model to fit your individual requirements.



MODEL QR
All Super features plus wet pick-up. Carpets and rugs can be dried after shampooing where they lie, suds and scrub water removed from bare floors. Saves time, expense and inconvenience.



MODEL QS
A Super quiet suction cleaner with multi-stage fans for powerful pick-up. Practically noiseless operation. Light weight and easily portable on any kind of floor.

SPECIAL ★ SUPER TOOLS ★
For Theatre Cleaning

SUPER SCREEN BRUSH — Cleans sound holes and screen, insures top reproduction of pictures and sound track. Prolongs life of screen.

SUPER BLOWER ELBOW — Boosts popcorn, papers, boxes and other debris out from under seats, from behind and under counters and around popcorn machine for easy disposal.

SUPER SPOT LIGHT — Throws a strong beam from attachment to handle in front of the floor tool. Enables you to get dirt from under and behind things without stooping, squatting or eye strain. Saves house lights.

SUPER HI-UP TUBE — Adds 10 feet to reach of operator. Additional 5 foot lengths available. Cleans all high places and objects.

Standard tool equipment enables you to do general and usual housecleaning. Special tools for specific and difficult tasks may be obtained at small additional cost.

Leading wholesalers and supply houses sell and service the Super. Ask your supply dealer for a demonstration. Write for complete data.

NATIONAL SUPER SERVICE CO., Inc.
1951 N. 13th Street, Toledo 2, Ohio

SUPER SUCTION
SINCE 1911 ®
"THE DRAFT HORSE OF POWER SUCTION CLEANERS"

Read why Sidney Lust has used only American Seating Company chairs for fifteen years!

SIDNEY LUST THEATRES

MD. D.C. VA.

EXECUTIVE OFFICES: KASS BUILDING, 711 14TH ST., N. W., WASHINGTON, D. C.

September 26, 1950

Mr. Herbert Underkofler
American Seating Company
16th & Hamilton
Philadelphia, Pa.

Dear Herbert:

The recent completion of the seating of the Viers Mill Theatre has again brought to mind how well you and your company have attended to our seating requirements, starting with our first installation of your seats at the Milo Theatre in 1935. Those first seats do not look as bright and shiny as the ones you have just installed, but for 15 years they have withstood the punishment of daily use, and are still in the best of condition and good for many, many more years. Furthermore, every chair in our circuit is an American Seating Company seat.

The fact that we get these long-wearing qualities as well as neat appearance and unusual comfort has completely sold us on your chairs.

Another important factor from our point of view which may be of interest to you is that of maintenance. There simply has been no maintenance cost to us except for an occasional simple replacement of upholstering. The seats are mechanically perfect.

All in all, I want to thank you for coming up with the right answers to all our seating problems.

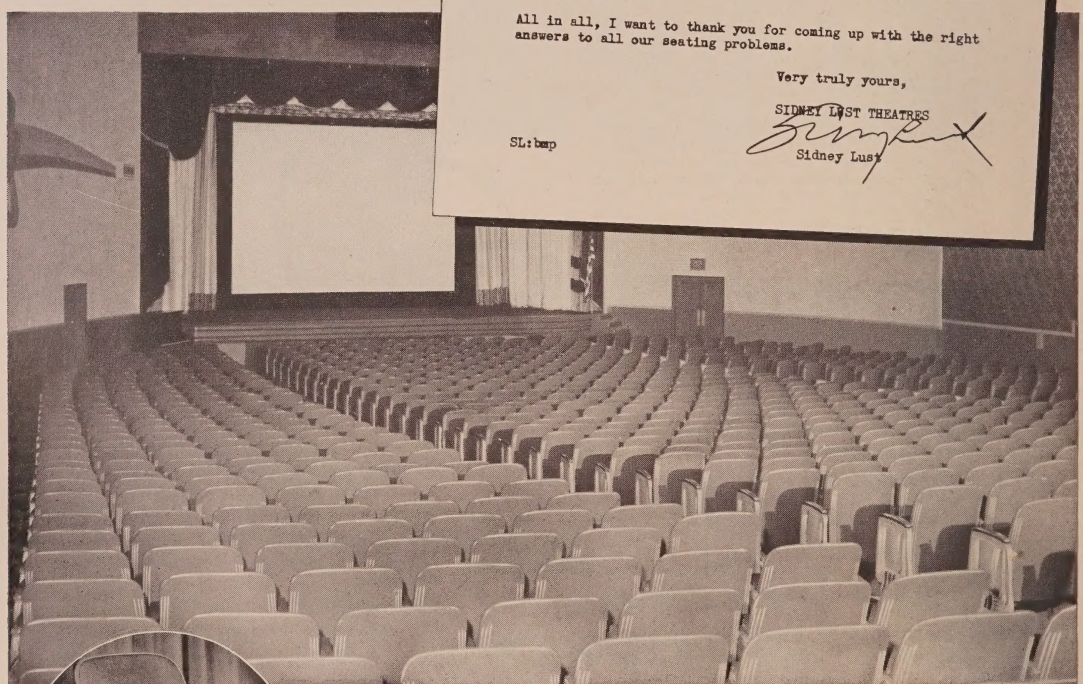
Very truly yours,

SIDNEY LUST THEATRES

Sidney Lust

SL:bmp

948 American Bodiform Retractors recently installed in Viers Mill Road Theatre, Viers Mill, Maryland. Architect: Richard L. Parli, Arlington, Virginia.



American Bodiform Retractor No. 20-001 with No. 128 Aisle Standard as used in the Viers Mill Road Theatre

American Seating Company

WORLD'S LEADER IN PUBLIC SEATING

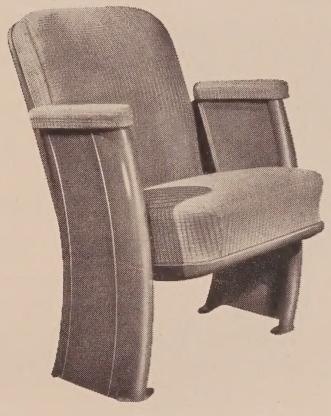
Grand Rapids 2, Michigan • Branch Offices and Distributors in Principal Cities
Manufacturers of Theatre, School, Church, Auditorium, Transportation, Stadium Seating, and Folding Chairs

COMFORT Builds Profitable Patronage

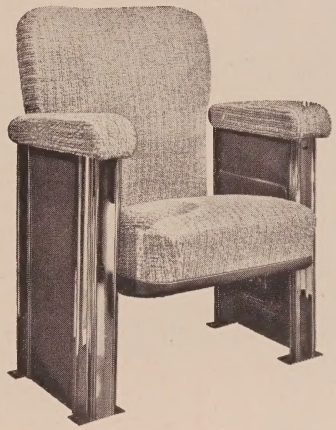
HEYWOOD-WAKEFIELD
125TH ANNIVERSARY

THE EXPERIENCE of operators from Coast to Coast shows that Heywood-Wakefield seating builds profitable business. The extra comfort of these handsome chairs makes patrons *want* to come back. Be sure to see the wide range of current models—and learn the many money-saving advantages of Heywood-Wakefield construction. Call your nearest Heywood-Wakefield distributor or one of our sales offices in Baltimore, Boston, Chicago or New York. Heywood-Wakefield, Theatre Seating Division, Menominee, Michigan.

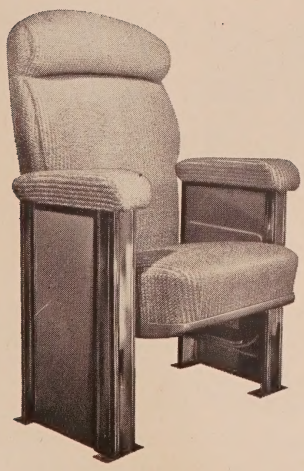
TC 700



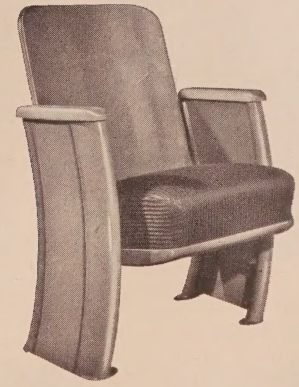
TC 701



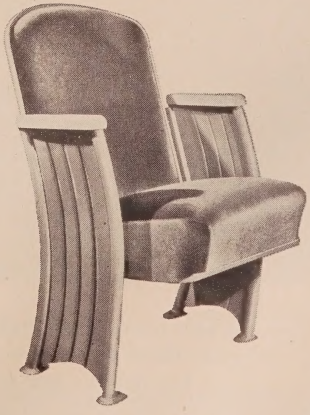
TC 706



TC 703



TC 704



TC 610

TIME FOR COMFORT—Full page advertisements featuring Theatre Seating are included in the new schedule in Time Magazine telling all America about *all* Heywood-Wakefield Products.

THE ALL-NEW, ALL-STEEL

IDEAL Universal chairs

NOW, FOR THE FIRST TIME, A SINGLE CUSTOM-BUILT CHAIR IN 32 DIFFERENT MODELS

16 different construction combinations—each in either retractable or conventional type, which can now be intermixed with uniformity of end standards retained.

This Ideal engineering triumph—revolutionary in principle — makes possible a flexible production method that permits the greatest chair values in the history of show business.

TREMENDOUS SAVINGS FOR THE EXHIBITOR

- THE NEW "WONDER HINGE"—full floating, full compensating, self aligning, absolutely frictionless. Truly an amazing advancement in hinge engineering. All working parts fully enclosed. The "Locked In" feature assures the cushion being firmly held in the chair yet not a single tool is required to remove or replace the seat and hinge—completely silent with up and down rubber stops. Automatic and foolproof seatlifting mechanism.
- NEW DURABILITY—finest all-steel construction—the sturdiest chair made.
- NEW LUXURIOUS COMFORT—improved relationship of position of back to seat.
- NEW DESIGN IN END STANDARDS—more passing room—new design in seat pan for greater strength.
- NEW SAFETY FOR TOES AND CLOTHES—new steel back panel—completely covers the seat—prevents pinching hazards. No protruding nuts, bolts or screws to snag or tear clothes or hose.
- NEW BEAUTY—smart, attractive styling. Closed panel, full length center standards.
- NEW ECONOMY OF MAINTENANCE—new back and pan design for greater upholstery protection—a super smooth finish for easy cleaning.
- NEW EASE IN REUPHOLSTERING—for maximum service, more even usage, seats can be quickly rotated as to location in the theatre. It takes but a few seconds—no need to remove screws or bolts. In reupholstering, it is exceptionally easy to remove and replace upholstered parts.
- NEW EASE OF INSTALLATION—with any floor condition, in any location.

See this sensational new chair now at your Ideal dealers, or write today for details and prices.

IDEAL SEATING COMPANY

523 ANN STREET, N. W. **GRAND RAPIDS, MICHIGAN**

Only KROEHLER *Push-Back** Seats Give you Years of PROOF-in-USE!

*Fully Protected by Patents

Leading theatre managers agree that only Kroehler Push-Back—with its many years of proof-in-use—gives the four success qualities a theatre needs:

PROVED ADVERTISING FEATURES
Outstanding advantages of Push-Back Seats create valuable word-of-mouth advertising.

PROVED COMFORT AND CONVENIENCE
Thousands of comfort-conscious patrons heartily approve Kroehler Push-Back.

PROVED BOX OFFICE APPEAL
Push-Backs are real showmanship—permanent salesmen that pay off at your box office.

PROVED QUALITY AND DURABILITY
Day in, day out, in hundreds of theatres, Push-Backs have proved sturdy, efficient, durable.

The Only Theatre Seat that Combines Push-Back Conveniences with Kroehler Lounge-Chair Comfort and Style

1. Here's the normal, comfortable lounge-chair position of the Push-Back Theatre Seat.

2. Seated patrons need not stand—a gentle movement of the body slides the seat back.

3. Relax, chair slides back to normal, comfortable position—no standing up, no inconvenience.

Write or Wire Today

Chicago 11, Ill.
666 Lake Shore Drive

Los Angeles 7, Calif.
2028 So. Vermont Ave.

New York 18, N. Y.
206 Lexington Ave.

Dallas, Texas
2023 Jackson Street

Canadian Theatre Chair Co., Ltd., 40 St. Patrick St., Toronto 2B, Canada

KROEHLER *Push-Back* THEATRE SEATS
The World's Finest Theatre Seat

"Jeepers... imagine Dad sitting through a double feature!"

Even your fussiest patrons will enjoy the show more . . . *if* the seats in your theater are cushioned with Restfoam.

That means they'll come back more often. For Restfoam has plenty of box-office appeal.

Restfoam has plenty of appeal for theater owners, too. It's your best bet for long service with low maintenance cost. And it makes upholstery fabrics last and last. In fact, it's a *four-star* attraction:

★ **Gives greater comfort!** No lumps! No bumps! Patrons enjoy the firm, *natural* support of Restfoam.

★ **Cool and clean!** Restfoam is self-ventilated by millions of tiny, interlaced air cells. It is 100% genuine latex foam. And it contains no dust-making materials.

★ **Keeps its shape!** Nothing to shift or slide. Nothing to pack or mat down. No broken wires to pop out. No wonder you get longer and safer service from Restfoam.

★ **Cuts upkeep costs!** Restfoam relieves strain on covering materials. Your fabric stands up better—and longer.

So . . . if *you* want to step attendance up and costs down, find out how Restfoam can help you do it. Specify Restfoam when buying new chairs—for furniture in lobby and rest rooms, too. See your theater architect or supply dealer. Or write for details today.

SEND FOR FREE APPLICATION MANUAL

for reupholstering of theater seats. New Application Manual shows you how easy it is for you to use Restfoam. Profusely illustrated. Send for your copy now! No obligation. Write Restfoam Division, 370 Lexington Ave., New York 17, N. Y., 1230 American Furniture Mart, Chicago 11, Ill.

Wherever you sit...wherever you sleep...

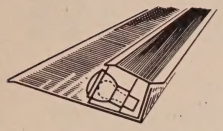
RESTFOAM®

COMFORT-CUSHIONED BY RESTFOAM DIVISION · HEWITT-ROBINS INCORPORATED

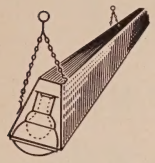
Theatrical Lighting

of Every Description

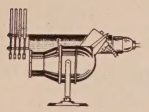
for the STAGE, AUDITORIUM and THROUGHOUT the BUILDING



FOOTLIGHTS



BORDERLIGHTS



FRONTLIGHTS

DOWNLIGHTS

RECESSED FIXTURES

EXIT LIGHTS

DIRECTIONAL SIGNS

AISLE & STEP LIGHTS

EFFECTIVE LIGHTING attracts patronage. Recognized as a contributing factor in profitable theatre operation, it may be skillfully applied to create a delightful atmosphere and to give a distinctive character to your show place.

Kliegl lighting specialties offer unlimited possibilities from the theatre entrance to a fully equipped stage — for general illumination, decorative lighting or theatrical presentations.

Manufacturers of the world's largest line of theatrical lighting specialties, we offer a wide choice of equipment and can supply lighting devices for every conceivable purpose — of conventional design or custom made — for the comfort, safety and enjoyment of your patrons.

ORIGINATORS AND MANUFACTURERS OF *Klieglights*

Having served the theatre for fifty-five years, and introduced many of its modern lighting concepts, we have the "know how" gained by past experience. This knowledge of our engineers and craftsmen, implemented by adequate production facilities, assures product performance to your complete satisfaction, correct solution of your lighting problems, and proper fulfillment of your requirements.

Our staff is at all times available for your assistance in planning a lighting installation or selection of suitable equipment for a specific functional purpose. Recommendations are offered without obligation and detailed drawings or cost estimates are furnished on request. Take advantage of our services. Your inquiries are cordially invited.

CATALOGS

Our general catalogs covering many items of interest to theatre operators and our bulletins on new developments, are useful and valuable sources of information. Any or all of our literature will be sent to you for the asking.

KLIEGL BROS

UNIVERSAL ELECTRIC STAGE LIGHTING CO., INC.

ESTABLISHED 1896

321 WEST 50th STREET

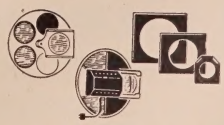
NEW YORK 19, N.Y.

KLIEGLIGHTS

SPOTLIGHTS

BOOTH SPOTLIGHTS

FLOODLIGHTS



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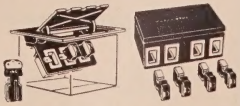

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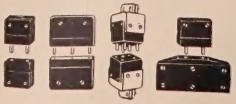

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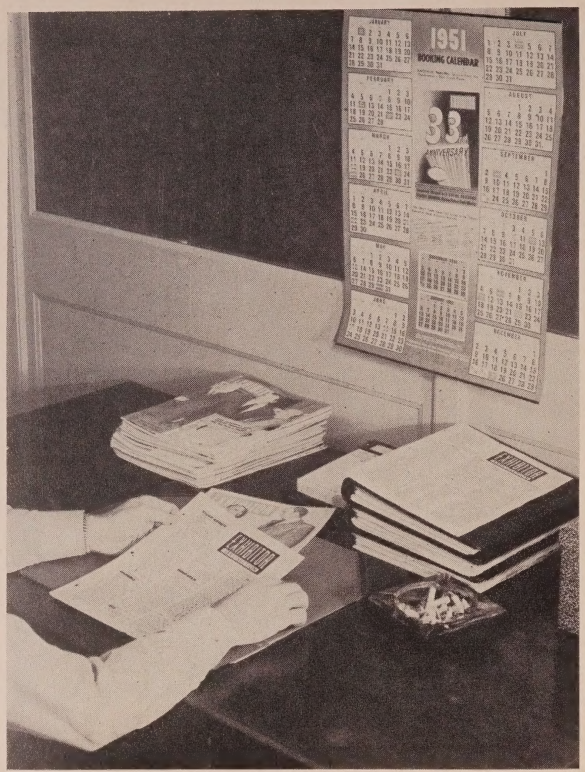

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PROJECTION *and* SOUND

1950-51

Choosing the Proper Type and Size Arc

Recent Developments in the Science of Projection Are Analysed With an Eye to Specific Applications

By W. W. Lozier and E. R. Geib
National Carbon Division
Union Carbide and Carbon Corporation

BRIEF: *Nearly every theatre owner . . . at one time or another . . . has been confronted with the choice of an arc that will give him the finest light obtainable on his particular screen . . . for he knows that the projection booth and its equipment constitute the true "heart" of his house . . . Luxurious appointments are all to the good . . . but in the final analysis it is the quality of entertainment presented on the screen that counts . . . Even an Academy Award winner will produce many patron complaints if poorly projected.*

The selection of a suitable projection lamp and carbons has never been an easy one . . . but there are certain definite requirements which should be met . . . The following article aims to point out what these general criteria are . . . and how they may be fulfilled with the vastly improved equipment now on the market . . . Discussed for the guidance of every theatre owner are such matters as: factors needed to create an impression of realism . . . various types of projection lamps . . . types and sizes of carbons . . . light-absorbing devices, etc.

The requisites for good theatre projection were initially outlined in an article entitled "What Type and Size Arc Should I Install in My Theatre?", which appeared on pp. 219-222 of the 1942 Edition of THEATRE CATALOG. During the intervening years, there has been much technological progress in the field of theatre projection equipment. New developments and advances in projector carbons, lamps, and optical systems offer new possibilities. Also, in recent years other forms of entertainment have encroached upon the motion picture theatre field and are making strong, and, in some instances, very successful bids for the entertainment dollar. This makes it more imperative than ever before that high screen lighting standards be reached and maintained. Attractive and comfortable theatre interiors are merely accessories. The real drawing power is the picture, properly projected. As an aid to better projection, a new and up-to-date analysis considering present day equipment is herewith presented.

FACTORS IN REALISM

Brightness of Image

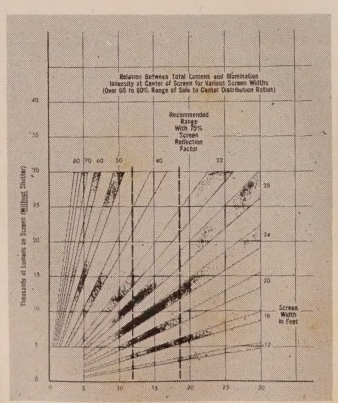
The brightness of the image on the motion picture screen is one of the most important factors in creating a vivid feeling of realism in the mind of the observer. Adequate screen illumination gives sharp definition to details of the picture which are lost when the screen light is dim. It also permits the use of a higher level of general theatre illumination, thus facilitating movement of the patrons within the theatre.

The recommended standard for indoor theatres states that the brightness in the center of a screen for viewing 35mm motion pictures shall be 9 to 14 foot-lamberts when the projector is running with no film in the gate. With a screen reflection factor of 75%, the corresponding intensities of light projected onto the screen will be 12 to 18.7 foot-candles in the center of the picture area. The total amount of light which is required to produce a given illumination depends upon the level of that illumination, the size of the screen and the distribution of light over the screen, that is the ratio of the side to center illumination. Fig. 1 shows this relationship over the range of screen sizes and distributions of interest in motion picture projection. This illustration also shows the range of illumination intensities necessary to produce recommended brightness with a 75% screen reflection factor.

Color Quality of Light

Another factor of prime importance to the impression of realism created by the picture is the color quality of the light. Due in all probability to our adaptation to daylight, a light of the color quality of daylight appears "whiter" and more pleasing than some artificial light sources. For example, illumination from incandescent tungsten lamps appears an unattractive yellow in direct comparison with daylight. This reaction is noticeable with black and white pictures and resulted in a preference for snow-white projection light even before color features were known. The advent of colored motion pictures has, of course, greatly increased the importance of color quality in projection lighting.

FIGURE 1—Foot-Candles at center of screen with shutter of 50% transmission.



In order to obtain faithful reproduction of the various colors during projection, the color of the projection light must be suitably adapted to the requirements of the film as finally processed for projection. All 35mm motion picture color processes have been designed for projection with a light of daylight quality which has an essentially even balance of intensity of radiation in the various component colors making up the white light. The widespread and growing prevalence of color features today, therefore, makes color quality of the light practically equal in importance to quantity of light when considering the type of projection lamp to be installed.

TYPES OF PROJECTION LAMPS

There have been available two general types of carbon arc projection lamps, those using low-intensity arcs and those with high-intensity arcs. However, due to their outstanding advantages, the high-intensity arcs have largely replaced low-intensity ones in existing theatres and are being used in all new installations. It should be only a matter of time until the conversion of existing installations to the high-intensity arc is completed.

High-Intensity Arc Advantages

The high-intensity arc employs rare earth materials in the core of the positive carbon or, in the case of the a.c. high-intensity arc, in the cores of both carbons. By operating the arc at the proper arc length and suitable current density, a light of daylight quality and of extremely high brightness is produced. As shown in Fig. 2, the brightest portion of the light source occurs in and near the crater of the positive electrode. It is readily possible to obtain a crater brightness in the range 350 to 1,200 candles per square millimeter and values over 2,000 c/mm² have been experimentally obtained. By way of contrast, the low-intensity arc is limited to a brightness of approximately 175 c/mm².

Furthermore, the color quality of the light produced by the high-intensity arc is excellent for motion picture projection, especially for the projection of color pictures. Fig. 3 shows that the light is very evenly divided between the three principal divisions of visible colors. This assures a proper color balance for the projection of motion pictures with faithful reproduction of the colors. Contrasted with this even color balance, the low-intensity arc is deficient in violet and blue and has an excess amount of orange and red which gives a yellowish tint to the light.

High-intensity arcs are available both for direct current and for alternating current operation. Both reflector and condenser type optical systems are used for carbon arc projection lamps. Outlined in Table I are the characteristics, operating conditions, and performance of the principal high-intensity carbon arc projection systems.

Descriptive Table of Carbons

Table I also shows the types and sizes of carbons normally used with the different lamps and the current ranges over which they are operated. The data on screen light output of the different types of lamps have been taken from material previously published, and represent approximately the optimum that can be obtained from high-quality, well-adjusted equipment. The ranges of screen light cover the extremes of current and screen distribution values, ranging from those characteristic of the focal adjustment which produces maximum light, on the one hand, to those pertaining to the rather uniform screen distribution of 80% side-to-center ratio on the other hand.

Many factors influence the exact light output and screen brightness from equipment in a specific theatre. However, in order to obtain an approximate idea of the sizes of screens which can be illuminated to the recommended standards of brightness, screen light values for a screen distribution approximately intermediate between those just described have been combined with a projector shutter of 50% transmission (90° openings) and a diffusing screen of 75% reflection factor. In this manner, approximate ranges of screen sizes which can be illuminated to minimum and maximum recommended brightness have been set up as shown in Table I.

One-Kilowatt Reflector Lamps

These lamps are the smallest in size and lowest in output of the high-intensity projection systems. They employ the popular copper-coated "Suprex" carbons, which are operated non-rotated in horizontal, coaxial alignment. In spite of the fact that their light output is approximately twice that of a low-intensity lamp, their operating cost is no higher than that of a low-intensity arc. As shown in Table I, they are capable of illuminating screens 17 to 21 feet in width to the recommended levels.

In view of the foregoing facts, there seems to be no reason why even the smallest theatre should not have daylight-quality, high-intensity carbon arc illumination of its screen with brightness levels equivalent to those obtainable in the finest houses.

"Suprex" Carbon Reflector Lamps

These popular lamps, employing the well-known copper-coated "Suprex" and "Orotip" C carbons burned non-rotated in coaxial alignment, were first introduced in the early thirties. They are used by many thousands of theatres in the middle-class size. Like the one-kilowatt lamps, they are very economical to operate, particularly in relation to the amount of light produced. Table I shows that they are capable of lighting 18 to 27-foot screens to maximum brightness and 22 to 32-foot screens to minimum brightness.

Rotating Reflector Lamps

Before the advent of the lamps employing "Suprex" carbons non-rotated,

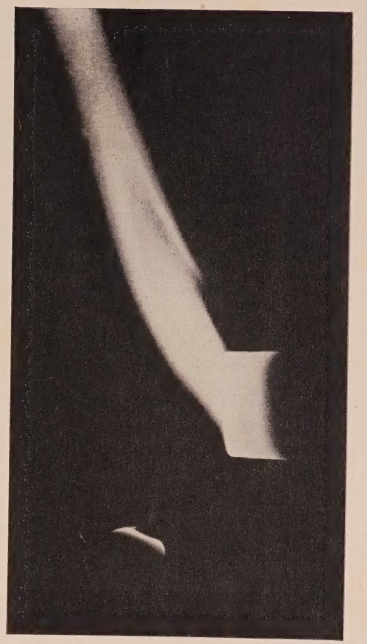


FIGURE 2

there were available the so-called "High-Low" lamps which were also of the reflector type and employed a bare rotating positive carbon with the negative carbon placed at an angle. These lamps, however, were replaced almost

Table I—High-Intensity Carbon Arc Projection Systems

Type of Lamp	Carbons *Positive*	Carbons *Negative*	Current Range-Amps.	Approximate Screen Light Lumens (1)	Aprox. Screen Width Which Can Be Illuminated to Recommended Brightness Levels for Indoor Theatres (2) *Maximum Brightness 14 Foot-Lamberts*	Aprox. Screen Width Which Can Be Illuminated to Recommended Brightness Levels for Indoor Theatres (2) *Minimum Brightness 9 Foot-Lamberts*
Reflector Lamps						
"One-Kilowatt" A.C. and D.C.	7mm x 12 or 14" "Suprex" (4)	6mm x 9" "Orotip" C	58-65 A.C. - 40 D.C.	5,900-6,500	17 feet	21 feet
"Suprex" Carbon Reflector	7 and 8mm x 12 or 14" and 9mm x 14" "Suprex"	6, 7 and 8mm x 9" "Orotip" C	42-85	6,600-16,000	18-27	22-32
Rotating High (3) Intensity	9 and 10mm x 20" H.I. Projector	5/16" and 11/32" x 9" "Orotip"	75-100	14,000-20,000	25-30 (3)	30-35 (3)
Condenser Lamps						
Rotating High (3) Intensity	13.6mm x 22" H.I. Projector	7/16" or 1/2" x 9" "Orotip"	125-150	11,500-20,000	25-30 (3)	30-35 (3)
Rotating High (3) Intensity	13.6mm x 22" "Hitex" Super	7/16" or 1/2" x 9" Heavy Duty "Orotip"	170-180	17,500-25,000	30-33 (3)	35-40 (3)

(1) Screen lumens without shutter, film, or filters of any kind; f/2.0 treated projection lens; see JOURNAL OF SOCIETY OF MOTION PICTURE ENGINEERS, January, 1947, page 76, and June, 1950, page 726, for more complete details and test conditions.

(2) Assuming 50% shutter transmission and 75% screen reflection factor.

(3) These systems may require protection from heat on film, and any light losses for this or any other reason will influence corresponding screen widths. For example, a 10% loss in light will reduce by approximately 5% the screen width which can be illuminated to a given brightness.

(4) Used for both electrodes on A.C.

completely by lamps using "Suprex" carbons, which, due to carbon and optical system developments, surpassed them in light output with substantially lower operating costs.

However, during the past two or three years, improved carbons and optical systems have made it possible to bring out new high-intensity, rotating-carbon reflector lamps which surpass the output of the old non-rotating lamps using "Suprex" carbons. The new lamps employ 9 to 10mm plain positive carbons with copper-coated "Orotip" negative carbons placed at an angle below the horizontal. The positive carbon is rotated during burning to preserve a symmetrical crater.

Some of these lamps are equipped with automatic focus control devices and means for automatic arc regulation. A heat-responsive, bi-metallic strip device is employed to position the positive crater automatically at the focal position of the reflector. Other means are used to control the position of the negative carbon with respect to the positive to maintain proper arc burning conditions. These lamps also employ reflectors of a higher optical speed than those available previously and are capable of effectively utilizing projection lenses in the range of speeds from F/1.9 to F/2.0.

Some of these lamps employ water-cooling for the positive contacts, while others use forced air currents in various fashions. According to Table I, these lamps are capable of lighting screens of 25 to 30-foot width to maximum recommended brightness and 30 to 35 feet to the minimum recommendation.

Rotating Condenser Lamps

This type of lamp represented the earliest application of the high-intensity arc to motion picture projection and first appeared approximately 30 years ago. However, improvements in carbons and optical systems have kept this system in the forefront, so that it continues to furnish the projection for most of the large indoor theatres and a sizeable percentage of the drive-ins today.

These lamps employ positive carbons 13.6mm in diameter with copper-coated "Orotip" negative carbons placed at an angle, as shown in Figs. 2 and 4. The positive carbon is rotated during burning to preserve a symmetrical crater form. The so-called "regular" carbon is operated at 125 to 150 amperes, while the "Hitex" Super is rated at 170 to 180 amperes. The "regular" can light screens of 25 to 30-foot widths to maximum levels and 30 to 35 feet to minimum recommended levels. The "Hitex" Super is capable of increasing these widths approximately 10%.

OTHER CONSIDERATIONS

Light-Absorbing Devices

It should be kept in mind that the screen widths indicated in Table I are applicable in cases where there are no filters or other light-absorbing devices in the beam. In cases where such accessories are present, correction of the figures in Table I is necessary. For example, in some cases a draft glass is used in the projector, and, in others, a port glass is used on the booth. If these are present, it will be necessary to allow for their light losses. Then, all of the

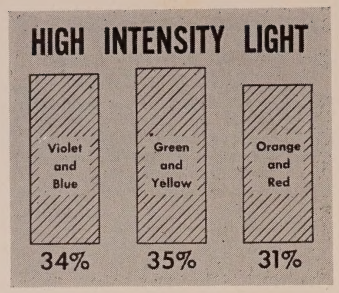


FIGURE 3—An even balance of all colors assures a snow white light of daytime quality.

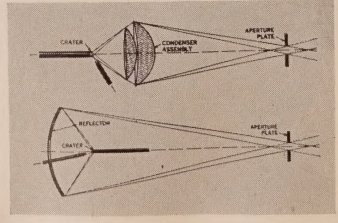
rotating high-intensity systems, both reflector and condenser, may require protection from heat on the film. If this shielding is accomplished by a heat-absorbing glass, its light losses must be included. For example, a light loss of approximately 20% will reduce the corresponding screen widths in Table I by about 10%.

Reserve Capacity Allowance

It should further be remembered that the values in Table I pertain to high-quality equipment in good condition and accurately aligned. Since optical systems show some deterioration with age, some allowance should be made to take account of the fact that it will not be possible to maintain top values in all cases at all times. Therefore, the wise purchaser will make allowance for some reserve to compensate for those losses and to provide for exceptional instances, such as dark prints with which it may be desirable to increase the light output of the lamp. If one wants to maintain the brightness constantly above the recommended minimum, then the lamp should probably be chosen with an inherent capability of providing at least the maximum recommended brightness, and, in cases where there are other known losses, the purchaser may even wish to provide more reserve capacity.

On this basis, that is, choosing a system capable of providing at least maximum recommended brightness, we can make a rough breakdown of the fields of application of the various lamps as follows. One could employ the "One-Kilowatt" lamps for screens up to approximately 17 feet and the "Suprex" carbon reflector lamps in the range 18 to 27 feet. A rotating-carbon type lamp then would be necessary for screens larger than 27 feet in width. This may often be capable of illuminating screens as large as 30 to 33 feet. If heat protection devices reduce the light by 10 to 20%, however, the rotating type lamps may not adequately illuminate screens larger than 27 to 30 feet in width.

FIGURE 4—Diagrams of high intensity arc lamp: (above) condenser type; (below) reflector type.



No Drive-In Standards Yet

All of the above correlation of projection systems and screen widths has been based on the recommended standards of brightness for indoor theatres. There are no recognized standards of brightness for outdoor theatres at this time. As shown in Table I and Fig. 1, it is impossible with existing projection systems to light screens in the 50 to 70-foot class, widely used in drive-in theatres, to even the minimum recommended brightness for indoor theatres. This does not mean that outdoor theatres cannot be successfully lighted with existing projection systems. There may be compensating factors, such as a larger viewing angle and absence of house illumination, which may facilitate the use of lower brightness levels in outdoor theatres.

However, there is no little doubt that these outdoor screens need all the light that they can get from present systems and could advantageously employ considerably more than they are using at present. However, in the absence of more powerful systems and until still further improvements in this line are forthcoming, outdoor theatres should unquestionably use the most powerful projection systems possible.

CONCLUSION

The theatre owner of today, whether indoor or outdoor, has a wide variety of high-intensity lamps from which to choose, all designed to give a large volume of snow-white light at a very reasonable cost. Surveys before World War II showed that the cost of projection light amounted to only a little over 2% of the total operating cost of the theatre. The small increase in the cost of carbons and power in relation to the much greater increases that have taken place in the other expenses of a theatre make the present day cost of projection light an even smaller fraction of the total than pre-war. Surely, in view of the importance of projection light to the quality of the picture and the satisfaction of the theatre patron and the very minor status of projection light cost, the first consideration of the theatre owner should be to obtain the best projection light possible.

It is hoped that the data here presented will be helpful in the selection of suitable projection lamp equipment and will indirectly assist in raising the standard of projection light throughout the country.

EDITOR'S NOTE

We are particularly proud at any time to present the views of Messrs. Lozier and Geib, for they are recognized as authorities in the field of projection light sources. Their current analysis however is particularly timely. Great strides have been made in this field in recent years and every theatre executive should read the foregoing.

Cinerama: A New Era in Film Entertainment?

Dramatic Process Brings True Reality to Screens With Three-Dimensional Picture and Sound System

BRIEF: ***Motion picture projection and sound . . . as we know them today . . . have almost reached a peak of technical perfection in the modern theatre . . . Nonetheless, the industry has not been blind to the fact that current film-making techniques have their limitations . . . for the patron still remains a mere observer of the action on the screen . . . and a more or less stoic listener to the sound which emanates from it . . . In short, he looks at the show without feeling a part of it.***

Various attempts have been made . . . primarily with both convex and concave screens . . . to create an illusion of life-like spatial relationships . . . but none have been particularly successful . . . Now . . . however . . . a process has been developed which captures real three-dimensional effects . . . because it starts right on the movie set to film everything within range of the human retina . . . and to record every sound normally heard by the ear from every direction.

Described in the following article are the important facts about Cinerama . . . the background of its development . . . principles behind it . . . its camera, sound system, and projection . . . and what its potentialities appear to be.

It is, perhaps, one of the greatest tragedies of our time that human emotions have been divorced from thought to the point where feeling and knowledge appear to be quite isolated from one another. This curious state of affairs has been due, in part, to a somewhat excessive emphasis in this materialistic age on the use of cold logic or reason without permitting the inspiring benefits of the emotions to come into play.

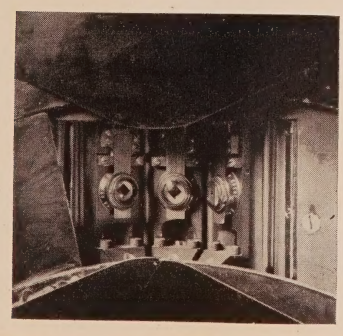
A typical example of such a paradoxical situation may be found in the general field of education, where thinking is highly trained, while feeling is left untrained. In this connection, both the conventional motion picture and television have been widely acclaimed for their contributions to the progress of education. Now while both of these media are supposed to convey feeling to their audiences, they actually fail to stir up to the fullest extent the emotions of the human spirit.

To be sure, maudlin shows on both theatre and television screens have evoked tears from the distaff element, but it is interesting to surmise how much greater the impact on the emotions might be if, instead of looking into a "box," so to speak, the members of the audience were *in* the box also, living, suffering, hearing, and seeing the same things which the creatures there do. If this were possible, feeling, as well as thought, would be truly educated.

CINERAMA

Incredible though it may seem, a method (in its first crude forms) now appears to have been found to "draw" theatre audiences into the show through a three-dimension picture and sound system which produce an illusion comparable to and sometimes more intense than reality itself. Creating a marvelous aura of panoramic sight and sound, which television can probably never attain, this revolutionary process awaits the flowering of its great potentialities in the motion picture theatre under the name "Cinerama."

THE CINERAMA CAMERA puts scene on three films, each of which constitutes one-third of final picture. Lines of sight of the three lenses cross at a point just in front of them, where a single disc shutter, seen at left, revolves. *(Photograph courtesy of Popular Science Monthly.)*



Background

To begin with, Cinerama is the invention of Fred Waller, who developed the well-known Waller Gunnery Trainer for use by the Armed Forces during World War II. By using five synchronized projectors on a spherical screen, Waller managed to produce a three-dimensional picture which closely reproduced the environment of a gunner in action and gave him his points of aim to plus or minus two gunnery mills or better. In addition, it gave him the mental experience of attacking and being attacked and of developing his emotional reactions to the point where he could control them with out "buck ague." Due to its significant achievements in conditioning gunners, the device is credited with preventing 350,000 casualties in training and combat.

Cinerama represents the further development of the original Waller Gunnery Trainer to provide a completely new and powerful medium for improving communications in the entertainment as well as other fields.

Principles

The illusion of reality created by the Cinerama process is closely linked to the functions of the retina of the human eye and the drum of the human ear. While a person's attention may be directed primarily at one particular object, his field of vision also encompasses everything on either side of it as far as the corners of the eyes can see. Likewise, a man walking down a city street, for example, hears not only the sounds directly in front of him, but also those on either side and behind him as well.

The Cinerama film process seeks to attain these effects of real life by surrounding the viewer completely with action and sound in an environment. Whereas conventional film allows an audience to look at a battle scene, for example, Cinerama has the effect of putting the audience *into* the battle. Planes appear to fly overhead, and men shout from behind as well as on all sides.

Camera

Since no single camera could possibly take in a fraction of the visual range of the human eye, the Cinerama camera is actually three cameras in one. Weighing only 150 pounds, it has three matched lenses of 27mm focal length which are set at angles 48° apart. Each lens photographs one-third of the scene's total width on one of three standard 35mm films carried in an equal number of magazines. The sight lines of the three lenses converge and cross one another at a point $1\frac{1}{16}$" in front of them; at this point, a single revolving-disk shutter is used for all of them to assure a perfect synchronization of the exposures. One knob focuses all three lenses at the same time, while another controls the diaphragm apertures.

The picture frames used in the camera are half again as long as those of standard height, and they are made by

THE CURVED SCREEN has side sections of vertical ribbons, which are arranged somewhat like the slats of a Venetian blind to eliminate reflection of light from sides to center of concave screen. Ordinary screen material would not do. *(Photograph courtesy of Popular Science Monthly.)*

advancing the 35mm film six perforations at a time instead of the customary four. Although the total amount of picture film used is four and a half times as much as that needed to make the conventional movie, the field of vision covered is approximately 146° wide and 55° high—almost comparable to the extreme 160° by 75° range of human eyes.

Sound System

The field equipment for making Cinerama movies also contains a sound-recording outfit, which uses six omni-directional microphones to pick up all the sound from every angle that exists in the area being pictured, including the sections to the sides and behind the camera. The sound is recorded on a magnetic type film, which needs no laboratory processing and can be played back at once.

Speakers in the theatre, arranged in the same pattern as the microphones, are individually operated by the six sound tracks placed side by side on the aforementioned single strip of sound film. As a general rule, five microphones and speakers are set in a row across the full width of the picture set and the theatre screen, respectively. The sixth microphone is placed some distance behind the camera to pick up "off stage" sounds, while the last speaker is located in the rear of the theatre to reproduce them.

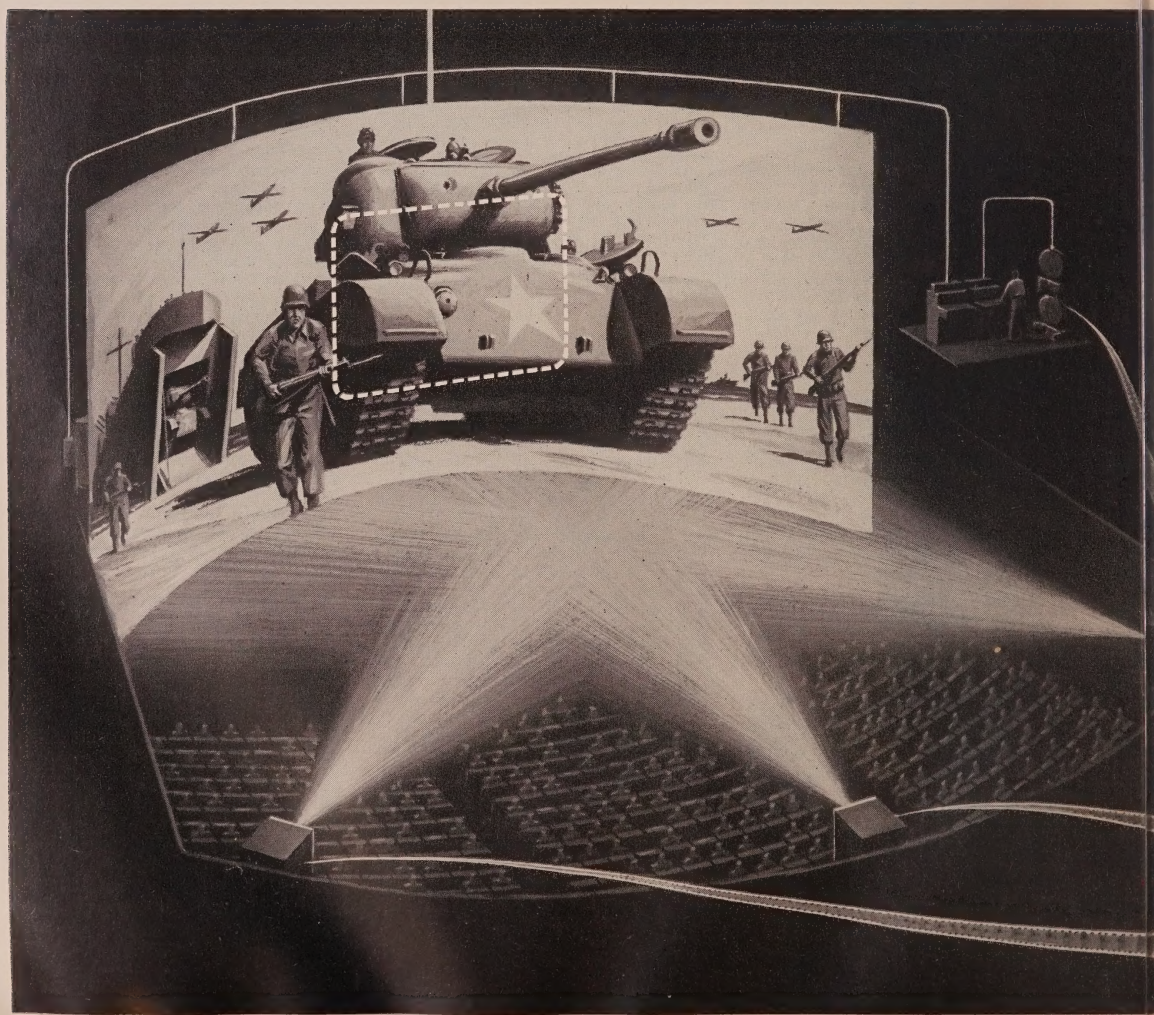
Projection

The Cinerama system requires three projection booths and machines to project the three sections of the picture side by side on a semi-concave screen almost six times as large as the conventional motion picture one. As mentioned previously, the 146° width and 55° height of the screen cover most of the area which the human retina does. As a result, the eye is permitted to exercise its peripheral vision, which provides the brain with its most important clues to third-dimension or spatial relationships.

The center section of the screen is usually curved on a 25-foot radius, and two flat wings run tangential to this curve. This curvature does not present a real problem in projection, for the focus depth of the lenses is sufficient to overcome any such contingency. The sections on either side of the center are ribbed vertically to eliminate any possible reflection of light from the ends to the middle.

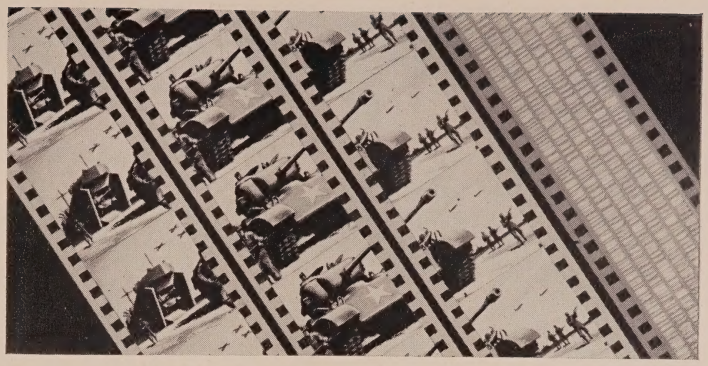
Each projector contains a novel mechanical device with a sawtooth edge which moves along the border of a film, so that the image slowly fades from view at its edge. Adjoining films are thus blended together on the screen without a noticeable dividing line.

SECTION OF DIAGRAM BELOW illustrates how a Cinerama show would appear on a special theatre screen and the equipment needed for its presentation. The three projectors throw the three sections of the picture side by side on the screen, while the five speakers behind, and a sixth in the rear of the house, carry the sound.



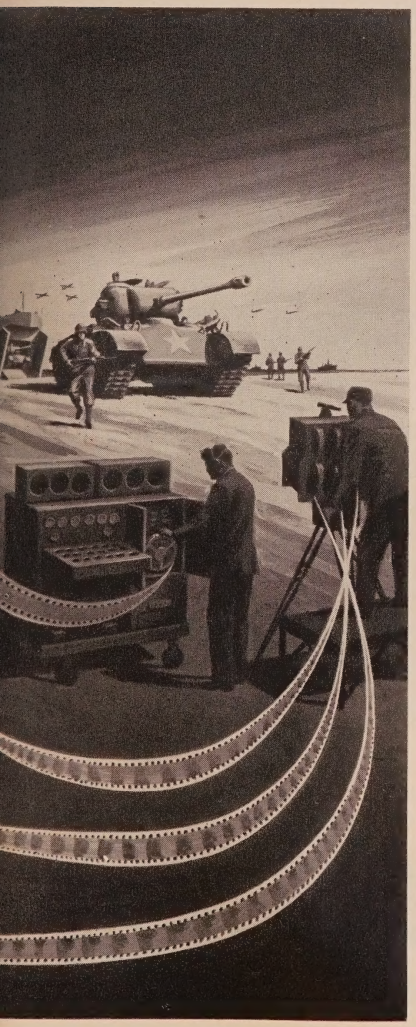
CONCLUSION

In order to prove to themselves that they had hit upon a genuinely revolutionary technique of film-making, the developers of Cinerama have held several experimental showings for interested groups. Reactions to the reality of the presentations on the part of these selected audiences were quite favorable. For example, one preview short depicting a roller coaster ride made several observers ill, and others confessed to feelings akin to those of nausea. Likewise, the sound of a church choir singing (in another short) before it came into view on the screen was so impressive as to cause a number of spectators to turn their heads instinctively toward the rear of the indoor tennis court (converted to a theatre) where the demonstration took place.



CINERAMA'S THREE-DIMENSIONAL PICTURE AND SOUND are produced by running four 35mm films simultaneously. The first three form the left-hand, center, and right-hand parts of the picture, when projected side by side on the theatre screen. The dark film at right carries the six sound tracks.

THIS SECTION OF DRAWING portrays the manner in which the picture on the opposite page is taken on location with the three-lens camera and portable sound recorder. Six omni-directional microphones pick up all the sound from every angle in the area being pictured. True reality is thus transferred to the theatre screen.



Although the preview films contained a few slight technical faults, which are being ironed out, the enthusiastic reception accorded the experimental showings has encouraged the backers to arrange for the production of several full-length films for showing to the general public. The first of these films will probably open in New York in the fall of 1951 as a road show, and, if it is successful, other showings will be held in key cities throughout the country on a similar basis. Plans already are afoot to organize crews which will move into theatres where exhibitions are to be given and set up the large screen required and the extra projection booths within 24 hours. It is estimated that equipment can be installed and shows held in most houses which are not extremely narrow.

While Cinerama is still in its infancy, it might eventually produce as great a revolution in the motion picture industry as did the introduction of sound. Since it appears capable of bringing to the theatre screen a broad range of visual effects comparable to those which observers of a spectacle on the legitimate stage enjoy, it may prove to be the film industry's answer to television.

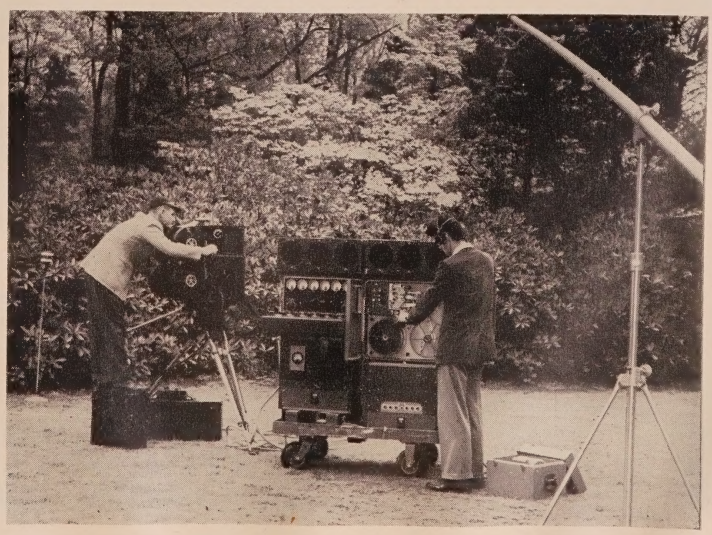
The future of Cinerama remains, of course, to be seen, but it is interesting to note in passing that it has already won the acclaim and financial support of some astute businessmen, among them that matchless showman of showmen, Michael Todd. Time will tell the tale!

* * *

Acknowledgment

The Editors of THEATRE CATALOG wish to express their appreciation to **Mr. Hazard E. Reeves,** President, Reeves Soundcraft Corporation, and one of the developers of Cinerama, for his helpfulness in supplying much of the data contained in the foregoing article.

FIELD EQUIPMENT FOR MAKING CINERAMA MOVIES consists of three-lens, 150-pound camera and sound-recording outfit with six microphones. *(Photograph courtesy of Popular Science Monthly.)*



WALKER SCREENS

Outstanding Advantages

of the WALKER HIGH INTENSITY SCREEN, PM WHITE SCREEN and PM SILVER SCREEN

- ★ The screen surface is molded in one piece, without a seam.
- ★ Molded holes, having smooth walls flaring out from the back of the screen, provide uniform sound distribution of higher fidelity.
- ★ Because these horn shaped holes are smooth and flaring, the normal vibration caused by sound is enough to keep them from becoming clogged with dirt. The sound holes remaining open assure no loss of sound clarity as the screen ages.
- ★ The shape of the molded holes, having no sharp edges, makes it easy to remove dust from the surface by brushing. The PM White Screen may be cleaned with our special cleaner. The PM Silver and the HI Screens may be cleaned by brushing alone, their harder surfaces being more resistant to dirt.
- ★ The projection surface is molded in a series of elliptical waves extending from the back of one hole to the back of the adjacent holes.
- ★ These waves, providing a surface which is not flat, reduce the effect of side seat distortion.
- ★ Light lost through the holes is less than 8% of the total striking the screen, much less than the amount lost through porous fabrics. Because none of this light passing through the screen is reflected back, the picture is not degraded by back reflection.
- ★ The elliptical waves of the surface provide a sharper image by preventing loss of contrast. Bright light diffused from a white area cannot spread into a black area for more than the distance from one wave crest to the next, where on any flat surface it may spread for a considerable distance.
- ★ Improvement in contrast caused by this blocking of surface diffusion is most noticeable on color reproduction. Sharp, clean colors result from preventing color degradation caused by diffusion along the surface.
- ★ This improvement in contrast is carried further in the HI Screen, where a metallized filter coating still adds to the control of stray light. Sharpness, color, and contrast are greatly improved.

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Motiograph Projectors are designed and built to operate longer without costly repairs and replacements, and consequently have the lowest possible ultimate cost. The post-war double shutter "AA" will give maximum screen illumination without flicker or travel ghost, and with a steady and clearly defined picture.

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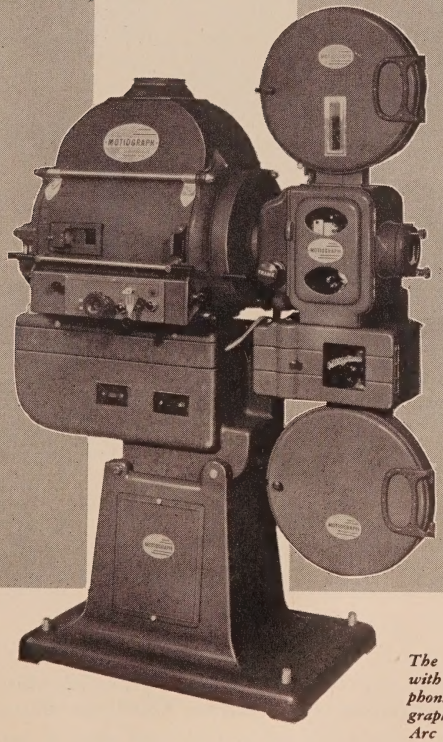
Both models of pedestals have provisions for precise horizontal and vertical optical alignment of lamp and projector mechanism. The pedestals have provisions for all possible projection angles, as they may be tilted 32 degrees downward and 17 degrees upward. The new "AA" Magazines are extra wide, and incorporate an upper reel shaft tension device and a fully enclosed take-up that will, after initial setting, stay in their correct positions for years without adjustment. Model "AA" Mechanisms, and both "AA" and "S" Pedestals, are designed for use with any standard sound reproducer, while "AA" Magazines will fit any standard projector mechanism or sound reproducer.



The Motiograph AA Projector Mechanism, with AA Pedestal, AA Magazines, Mirrophonic De Luxe 7500 Reproducer and Motiograph Hi-Power 75/115 ampere High Intensity Arc Lamp.

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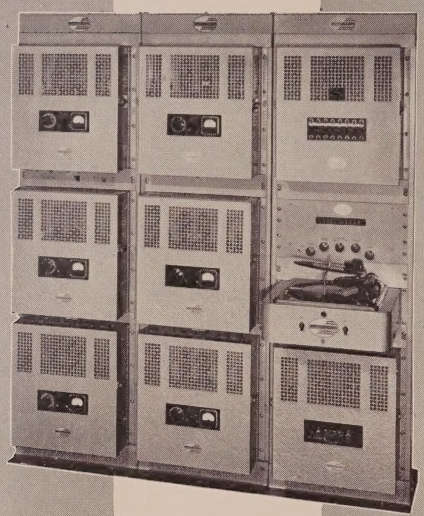
Sound Systems

FOR INDOOR THEATRES AND DRIVE-IN THEATRES



MOTIOGRAPH DR-6 SOUND SYSTEM (with auxiliary rack for ramp switching cabinet, radio, record player, and system exciter lamp power unit).

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Motiograph manufactures but one standard of quality in its sound equipment. The lowest cost model for the 500 seat theatre has the same quality components as do the largest models for 5000 seat indoor theatres or 1000 car drive-in theatres.

Motiograph furnishes deluxe SH-7500 reproducers based on designs of Western Electric Company and D.C. for the exciter lamps with auxiliary A.C. excitation, in all systems, regardless of cost or size of the system.

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Indoor theatre models are available with 20, 40, 75 and 150 watt amplifiers and with loudspeaker systems ranging from one high frequency and one low frequency unit to eight high frequency and eight low frequency units.

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Motiograph offers 10 sound system models with power outputs of 100, 150, 200, 225, 250, 300 and 500 watts for use with in-car speaker equipment or large central speaker systems. These systems are of two general types. One type has one or more preamplifiers (voltage amplifiers), one or two driving amplifiers, one or more 75 watt or 250 watt power amplifiers and one or two switching panels. The other type, the multiple amplifier systems, exclusive with Motiograph, have one or two preamplifiers, one or two combination driving and power amplifiers, two, four, six or eight power amplifiers, and varied amplifier switching facilities.

EMERGENCY FACILITIES

In the dual models of the Motiograph line switching facilities are provided which permit system operation on any or all of the amplifiers in the system. This is an unusual emergency provision.

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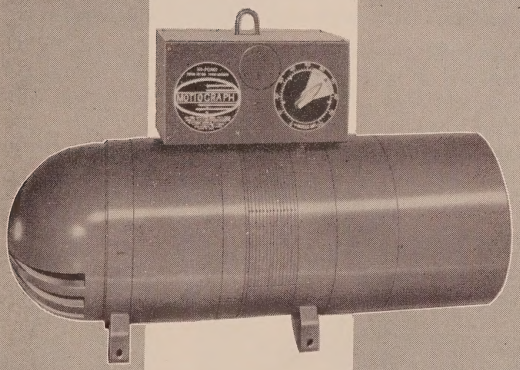
Hi-Power MOTOR GENERATORS



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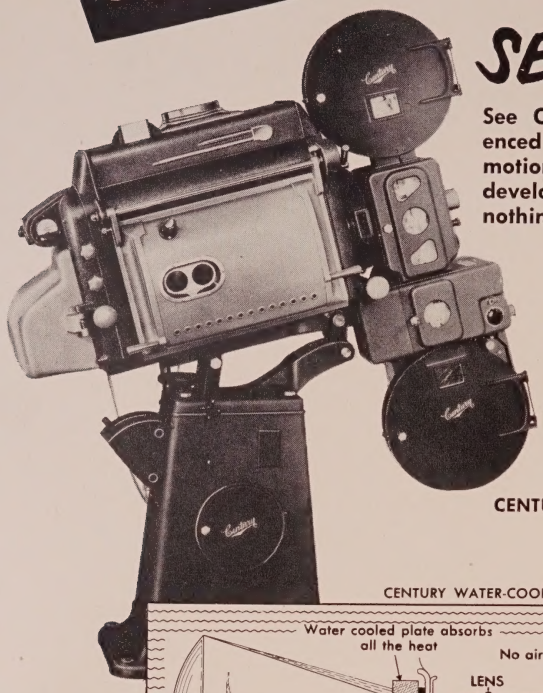
See CENTURY projection and be convinced. See why experienced exhibitors admit CENTURY leads in the development of motion picture projection and sound equipment. Every new development produced by CENTURY is scientifically sound — nothing is ever added as a sales promotional "come-on".

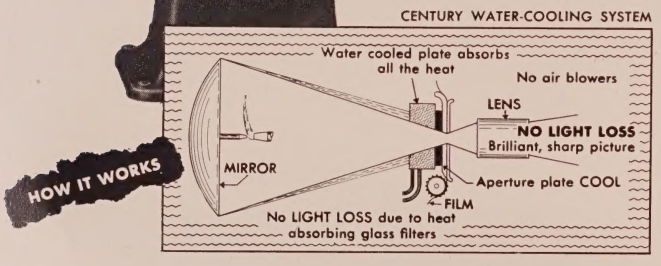


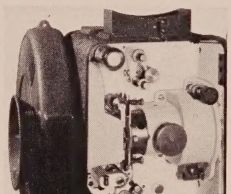
For instance:

With **CENTURY** you have no lubrication headaches — no dripping oil or grease to mess up equipment or film. To end this costly trouble **CENTURY** uses sealed, oil-less bearings and glass-hard, high carbon-chrome steel gears.

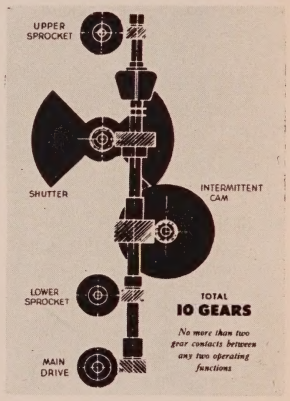
CENTURY design retains all of the advantages gained from the use of high power arc lamps. The additional light is not cancelled out by the need to use heavy, light-wasting heat filters to protect film.

CENTURY GIVES YOU THE BEST THAT MODERN SCIENCE CAN OFFER





Century Projector Mechanism With 4-Inch Diameter Lens Mount and Water-Cooled Aperture.



WATER-COOLED PROJECTOR APERTURE. An exclusive **CENTURY** development responsible for many advantages, such as:

- Reduction of destructive heat on film and equipment.
- Full brilliance and sharper pictures without loss of light or wasted power.
- More illumination on the largest screens.
- Film distortion reduced. Focusing trouble minimized.

Think of this . . . with the **CENTURY** water-cooled projector you get *more* light from a 90 ampere arc than from other projectors using 180 ampere arcs and heat filters!

SUPER-EFFICIENT OPTICAL SYSTEM. CENTURY projectors give you maximum screen illumination. With 4-inch lenses they provide pictures of increased brightness and appeal — for even the largest theatre screens.

HIGH EFFICIENCY MECHANISMS. Proof of **CENTURY'S** simplified, high-efficiency design can be seen in the illustration on the right. Ten gears with only two gear meshes between the shutter and the intermittent cam. (Other well known projectors have from 4 to 12 such meshes and up to 23 gears).

Fewer gears and shafts mean less trouble, lower maintenance, less vibration, sharper pictures . . . finer projection.

LUBRICATION VIRTUALLY ELIMINATED. Only **CENTURY'S** smooth, simplified design approaches the goal of oil-less operation. There are no oil sprays or oil baths to mess up film and projection room. Bindups and frozen bearings just don't happen.

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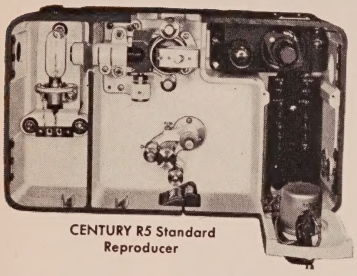
NEW YORK, N. Y.

you can HEAR the difference with Century SOUND SYSTEMS

CENTURY Sound Reproducers feature the famous flutter suppressor, exclusively. This device won the Academy Award because it is a "fundamental improvement in film drive" and "results in improved quality in the theatre". (Citation of the Academy of Motion Picture Arts and Sciences).

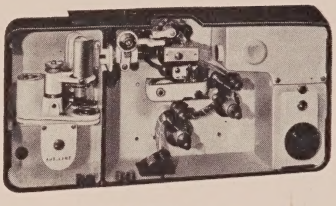
CENTURY Sound Reproducers employ a straight-through optical system, high in light efficiency. Reduces amplification requirements and noise interference. No mirrors or prisms to fog or tarnish.



CENTURY R5 Standard Reproducer

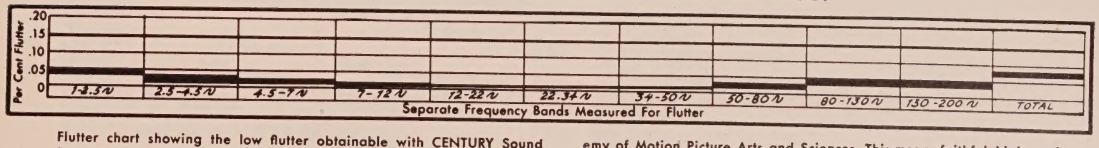
Mechanical Advantages:

- Quick and simple threading.
- Oil-less bearings— no oil to mess up film.
- Maintenance reduced due to simple design.
- Interchangeable unit construction simplifies service.
- May be used with any standard make of projector or pedestal.



CENTURY R6 Master Reproducer

CENTURY SOUND REPRODUCERS DO THIS FOR YOU:



Flutter chart showing the low flutter obtainable with CENTURY Sound Reproducers—less than half the amount set as acceptable by the Academy of Motion Picture Arts and Sciences. This means faithful, high quality sound in your theatre . . . the best in motion picture presentation.

Century SOUND SYSTEMS ENGINEERED FOR YOUR THEATRE

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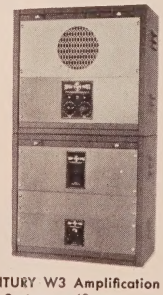
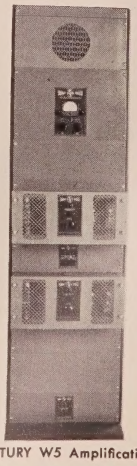
Because **CENTURY** equipment is designed on the unit principle each installation can be custom made to meet the physical or financial requirements of any theatre or drive-in. **CENTURY** Sound Systems are obtainable in single or dual channel and in power ratings from 15 to 1000 watts or higher. They include all operating features plus the flexibility to accomodate expansion and future modernization demands. Hollywood production advances will never outmode **CENTURY** Sound Systems.



CENTURY W3 Amplification System — 40 watts

CENTURY W5 Amplification System with D.C. Exciter Supply

CENTURY W3 Amplification System with A.C. Exciter Supply



CENTURY W5 Amplification System — 200 — 400 watts (Duo power Amplifiers) Rack Mounted

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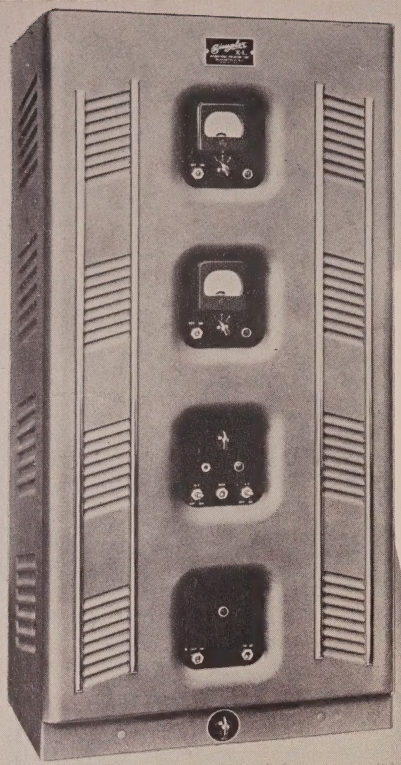

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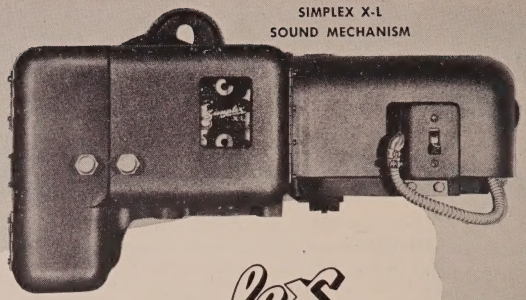

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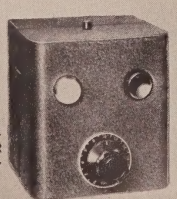

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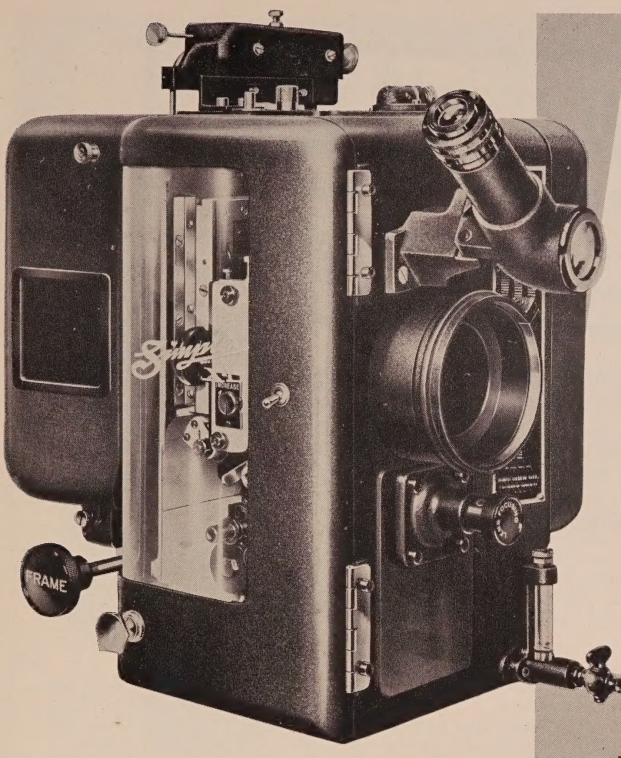

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The SIMPLEX X-L GIVES YOU:

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★ HAIRLINE DEFINITION
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★ ABSOLUTE DEPENDABILITY
★ LOWER OPERATING COST

NOTE THESE OUTSTANDING FEATURES:

MICROMATIC SCREENSCOPE
Guarantees swift, precise focusing

FUTURA LENS MOUNT
Takes Lenses up to 4 inch diameter

FULL-VISION OBSERVATION WINDOW

BUILT-IN FILM CHANGEOVER

EASY-VUE SIGHT BOX
No stooping—no squinting

LARGE OIL GAUGE
Indicates oil level at glance

CONICAL SHUTTER
Simplified design improves screen image

ROOMY FILM COMPARTMENT
More "finger room."

24 TOOTH SPROCKETS
Slower speed—smoother film control

FRAME LOCK INDICATOR
Eliminates framing guess-work

FILM TRAP AND GATE
Designed for easy cleaning and adjustment

AUTOMATIC FIRE SHUTTER
Can be re-set while projector operates

MECHANICAL LOAD REDUCED 80% ON START
(66-2/3% WHILE RUNNING!)
Decreased running wear — Reduced operating cost

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Gentle oil spray bathes all drive parts — including intermittent — in sealed compartment — provides ideal automatic lubrication. No oil can reach film!

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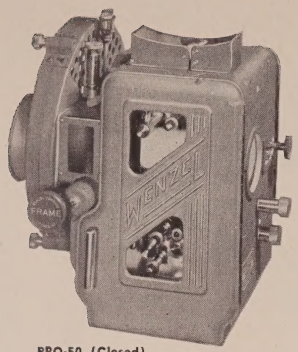

PRO-50 (Closed)

WENZEL
PROJECTOR COMPANY

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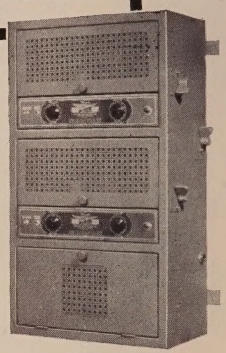
All Phones: CAlumet 5-6285 Cable: WENZKO

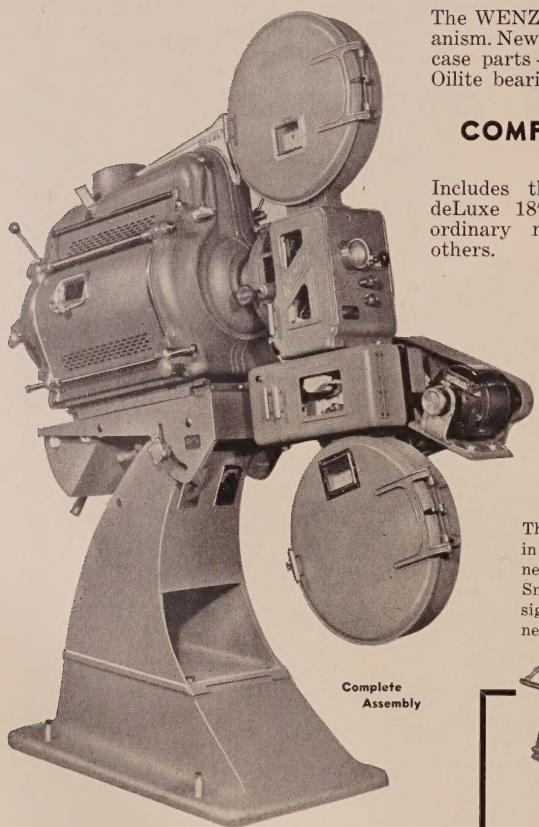

WX-46—Amplifier

NEW PROJECTOR HEAD

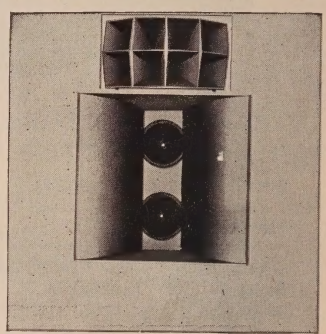
The WENZEL Improved PRO-50 Mechanism. New lens mount, new streamlined case parts — more room for operation. Oilite bearings throughout.

COMPLETE PROJECTOR ASSEMBLY

Includes the BW-600 base and the deLuxe 18" Magazines — deeper than ordinary magazines. LampHouse by others.

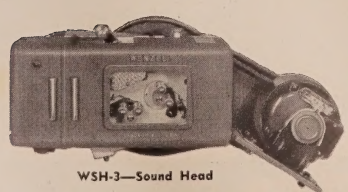

Complete Assembly

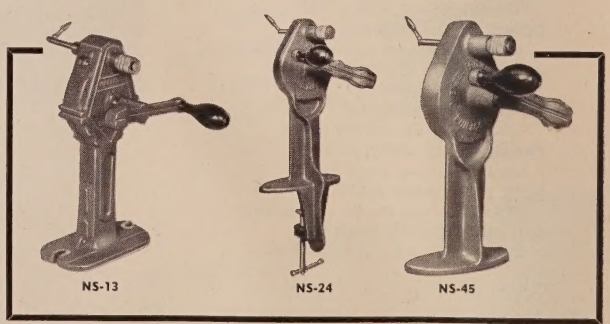
Wenzel "Ace" 35 M/M Projectors. Sound Heads and Sound Systems. Precision Replacement Parts and Accessories.


WB-300—Speaker

SOUND HEAD

The WSH-3 is "tops" in performance, permanence and preference. Smart, streamlined design. Precision engineered throughout.


WSH-3—Sound Head


NS-13 NS-24 NS-45

We are actively represented all over the world. However, there are still a few foreign territories open. (Write for full particulars.) Equipment sold only through Independent Theatre Supply Dealers.

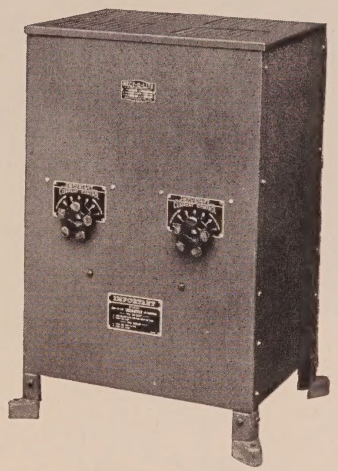
Wenzel Projector Co. manufactures several different models of Hand Rewinds in all three classes 8 - 16 - 35 M/M, plus An Automatic Enclosed Rewind.

We are also equipped to manufacture specially designed rewinds for Studios, Film Agencies, etc. Send for new illustrated Rewind Brochure.

WRITE FOR FREE LITERATURE

RECT-O-LITE MOTION PICTURE RECTIFIER

- Produces brilliant and flickerless light on screen.
- Most reliable rectifier on the market. It has no moving parts.
- Rectifying elements are the standard fifteen ampere bulbs, which can be replaced quickly, conveniently and inexpensively.
- Saves enough current to pay for itself. Write us for proof.
- Does not deteriorate with age. RECT-O-LITE maintains its original high effciency during its entire life.
- Has two 7-point control dials for quick regulation of the arc current.

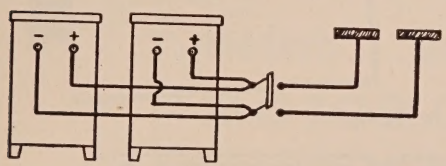


SUPREX RECTIFIER
Models 45 and 60

Guaranteed One Year

MULTIPLE USE SUPREX RECTIFIERS

RECT-O-LITE allows you to GROW without replacing your rectifiers. Note rating of Model 45T below. A perfect rectifier for an intermediate arc; low in price yet it delivers up to 50 amperes. Note our 60T—priced as a 50 ampere rectifier but, when you GROW, change connections and it will deliver up to 60 amperes. When you need still more light, use the output from two rectifiers for one arc. Many drive-in theatres have done it. Connections are simple—note diagram. RECT-O-LITES have wide range of voltage and current. Choose wisely. Buy once—not twice. Grow on the extra capacity of RECT-O-LITE.

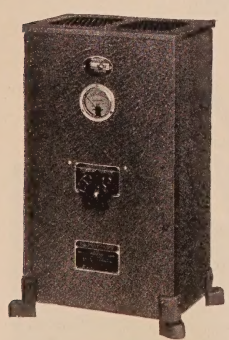


ARC

Diagram at left shows Model 60 RECT-O-LITES connected to one Arc. Ideal for Drive-ins. Delivers 70 to 90 amps. at 36 to 50 D.C. volts.

SPECIFICATIONS RECT-O-LITE SUPREX RECTIFIERS

Cat. No.	Case	Price	OUTPUT Volts at Arc	OUTPUT Amps. at Arc	INPUT Volts	INPUT Cyc.	INPUT Ph.	Net Weight	USES
R18	45A	$250.00	27 - 32	35 - 45	230	60	1	220	Intermediate Suprex Arc 35 amperes to 45 amperes. Suprex Arc 7mm. and 6mm. up to 45 amperes.
R20	45T	240.00	27 - 32	35 - 50	230	60	3	210	Intermediate Suprex Arc 35 amperes to 45 amperes. Suprex Arc 7mm. and 6mm. up to 50 amperes.
R24	60A	310.00	31 - 40	35 - 60	230	60	1	275	Suprex Arc 7mm. and 6mm. up to 50 amperes. Suprex Arc 8mm. and 6.5mm. up to 60 amperes. High Intensity Arc up to 90 amperes at 50 D.C. volts—2 rectifiers to 1 Arc. Spotlight up to 42 amperes at 50 - 55 D.C. volts. Same as 60A.
R26	60T	310.00	31 - 40	35 - 60	230	60	3	275	



LOW INTENSITY RECT-O-LITE

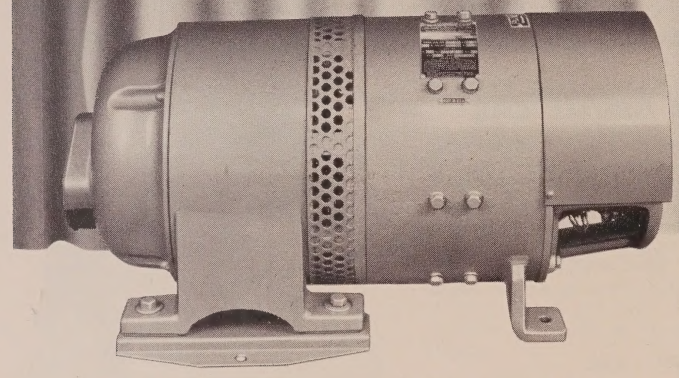
The Baldor low intensity RECT-O-LITE delivers 15 to 30 amperes at 50 - 55 D.C. volts. It has heavy duty transformer and large choke coil. This rectifier has plenty of iron and copper which assures reliable operation even on hard, continuous service. Thousands of Baldor 30 ampere rectifiers sold since 1934 are in daily use, performing satisfactorily year in and year out.

SPECIFICATIONS RECT-O-LITE LOW INTENSITY RECTIFIERS

Cat. No.	Case	Price	OUTPUT Volts at Arc	OUTPUT Amps. at Arc	INPUT Volts	INPUT Cyc.	INPUT Ph.	Net Weight	USES
R14	30A	$124.00	50 - 55	15 - 30	115	1	60	123	Low intensity arc up to 30 amperes.
R15	30A	124.00	50 - 55	15 - 30	230	1	60	123	

BALDOR ELECTRIC COMPANY
ELECTRICAL SPECIALISTS SINCE 1920
4351-67 Duncan Avenue St. Louis 10, Mo.

REDUCE YOUR POWER BILLS with a DC POWER SUPPLY DESIGNED FOR YOUR NEEDS



6 TYPES

TYPE "LV" for Simplex High 1 KW Arcs

TYPE "HI" for Suprex Type Arcs

TYPE "HIH" for Suprex and Spot Arcs

TYPE "MA" for 50-70 Volt Low and High Intensity Arcs

TYPE "CP" for 60-75 Volt High Intensity Arcs

TYPE "HS" for 50-58 Volt High Intensity and Spot Arcs for National 55,000 Type Lamp

with the Hertner...

FEATURES

1. Velvet-smooth power—no A.C. ripple
2. Cool, quiet performance
3. Safe, slow operating speed
4. Economical, long life, trouble-free operation
5. Modernized, compact, horizontal design
6. Proved experience since 1906
7. Sealed-for-life ball bearings
8. Designed for specific power supply of each installation
9. Easily adjusted ballast rheostats.

TransVerteR

REG. U. S. PAT. OFF.

Stable Arc Voltage Maintained Through Changeover Period

for **DELUXE THEATRES • SMALLER THEATRES DRIVE-IN THEATRES • AUDITORIUMS**

Thousands of TransVerteR units have been giving continuous service since the series type TransVerteR was introduced in 1915.

THE HERTNER ELECTRIC COMPANY

12690 ELMWOOD AVE. • CLEVELAND 11, OHIO

A General Precision Equipment Corporation Subsidiary

MOTORS • MOTOR-GENERATORS • GENERATOR SETS

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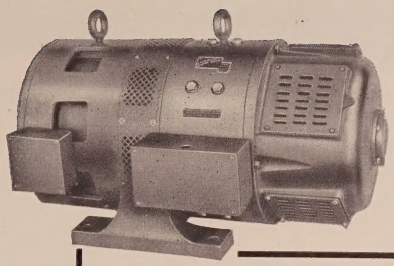
Equipment & Supplies For Every Theatre Need

NATIONAL THEATRE SUPPLY

Division of National • Simplex • Bladewerth, Inc.



ROBIN-ESCO

"Super-power"

Modern . . . Dependable . . . Unfaltering
MOTOR GENERATOR SETS

The Robin-Esco "SUPER-POWER" Motor Generator, especially engineered and built for motion picture projection, is the ultimate in modern power-conversion equipment.

Theatres and Drive-Ins recognize the quality and performance of "Super-Power" as the dependable, unfaltering power source necessary to meet modern projection practices.

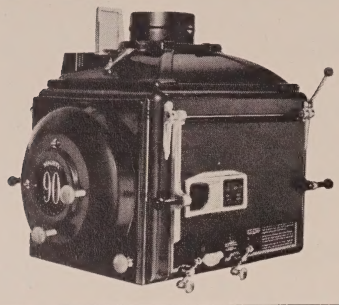
Distributed through Ind. Theatre Supply Dealers—Write for Information and Literature.

Robin-Esco "Super-power" M-G Sets are built by Electric Specialty Co., Stamford, Conn. exclusively for

J. E. ROBIN, INC. • 267 RHODE ISLAND AVENUE, EAST ORANGE, N. J.

J·E·ROBIN, INC. ★ MARK OF QUALITY ★

STRONG
PROJECTION LIGHTING EQUIPMENT
A HIGHLY EFFICIENT PROJECTION ARC LAMP FOR EVERY SIZE THEATRE



Strong Reflector-Type Arc Lamps	No.	Amperage	Lumens Projected With No Shutter	For Screen Widths	Strong Rectifiers Recommended
Mighty "90" High Intensity with exclusive Lightronic Automatic Focus Control. Forced air cooled feed mechanism. Bi-Metal Lightronic Tube controls both carbon feed motors. Big 16½" reflector. Air stream stabilization of arc.	90000	75-130	21000 at 90 amperes	From 26" up to the largest theatre or drive-in	No. 95000 No. 95001
Mogul High Intensity	17570	45-70	15000	24' up to 35'	Nos. 16100, 16500, 28100, 28400, 28600, 28700, 28900, 28910
Utility 1 K.W. High Intensity	14046	45-46	9400	18' up to 26'	Nos. 16100, 16500, 28100, 28600
Utility 1 K.W. High Intensity	14050	40-42	7000	14' up to 22'	No. 16200 (lamp not sold without rectifier)
Junior High 1 K.W. High Intensity for portable and semi-portable projectors.	21600	40-42	6000	12' up to 20'	No. 16200 (lamp not sold without rectifier)
Junior High Intensity for 16mm. projectors.	21000	30	2400	8' up to 15'	No. 26000 (lamp not sold without rectifier)
Portable Low Intensity	5000	15-18	1200	6' up to 10'	No. 7600 for portable use, No. 6650 for permanent installation

All Strong Lamps (with the exception of the Low Intensity) project a snow-white light of correct characteristics for the proper projection of color as well as black and white film.

When the lamps are ***STRONG*** *the picture is bright!*

Write today for literature or free demonstration of any STRONG product

THE STRONG ELECTRIC CORPORATION

The world's largest manufacturer of projection arc lamps—the only lamps produced complete within one factory

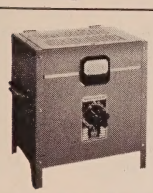
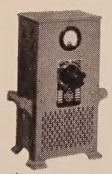
87 CITY PARK AVENUE **TOLEDO 2, OHIO**

STRONG
PROJECTION LIGHTING EQUIPMENT

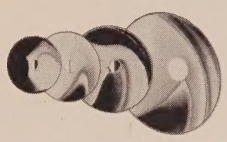
A HIGHLY EFFICIENT PROJECTION ARC LAMP FOR EVERY SIZE THEATRE

A DEPENDABLE RECTIFIER FOR EVERY TYPE PROJECTION LAMP

Smooth Output Current • Long Tube Life • Low Operating Temperature • Flexibility in Control

	Strong Rectifiers	No.	Amperage	Arc Voltage	Phase	Recommended For Use With These Lamps
	6-tube	95000	75 to 90	55	three	Any rotating feed H.I. lamp
	6-tube	95001	75 to 90	55	single	Any rotating feed H.I. lamp
	6-tube	95004	60 to 70	35	three	Any copper coated coaxial H.I. trim
	6-tube	95005	60 to 70	35	single	Any copper coated coaxial H.I. trim
	6-tube	95002	70 to 85	40	three	Any copper coated coaxial H.I. trim
	6-tube	95003	70 to 85	40	single	Any copper coated coaxial H.I. trim
	4-tube	16500	45 to 50	35	three	Any copper coated coaxial H.I. trim
	4-tube	16200	40	27	single	Any 1 K.W. H.I. lamp
	4-tube	16100	45 to 50	35	single	Any copper coated coaxial H.I. trim
	2-tube	7600	12 to 15	55	single	Any low intensity portable arc
	2-tube	6650	18 to 20	55	single	Any low intensity arc for permanent installation
	2-tube	6600	15 to 30	55	single	Any low intensity arc for permanent installation

STRONG REFLECTORS



Since the only light which can reach the screen must be reflected by the mirror, the loss in screen light during the gradual deterioration of a reflector is in direct proportion to the loss in mirror efficiency. Light losses through the use of worn-out reflectors, and amounting to several hundred dollars a year, are not unusual. Endeavoring to make up this light loss through the use of more current similarly represents a pure waste in the form of unwarranted power bills, all of which makes the cost of periodic mirror replacement a good investment. Strong precision reflectors, in a variety of types and sizes for use in all standard projector arc lamps, have long been recognized as a dependable standard of quality.

THE STRONG TROUPERETTE INCANDESCENT SPOTLIGHT

The Strong Trouperette has been designed especially for use in night clubs, schools, small theatres, TV studios, industrial shows and conventions, where physical dimensions and price are factors and where the tremendous volume of light of an arc lamp is not necessary.

A highly efficient optical system enables the Trouperette to project far more light than is possible with any conventional incandescent spotlight. This increased brilliancy is made possible by a variable focal length objective lens system, a 5¼-inch silvered glass reflector, and Fresnel lens used with a standard 115-volt, 1000-watt prefocused projection type bulb.

As contrasted to the conventional incandescent spotlight, with which the spot size is varied solely by irising, to result in substantial light loss, the Trouperette utilizes all of light through most of the spot sizes.

The brilliance of head spots is as much as 6½ times that possible with conventional lamps.

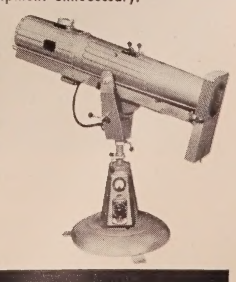
THE STRONG TROUPER PORTABLE HIGH INTENSITY A. C. CARBON ARC SPOTLIGHT

Produces a steady, sharp, uniformly illuminated, extremely brilliant snow-white spot.

Silvered glass reflector and two-element variable focal length lens system.

Draws only 10 amperes from any 110-volt A.C. convenience outlet. Adjustable, self-regulating transformer, an integral part of the base, makes the use of heavy rotating equipment unnecessary.

Easily operated. Automatic arc control maintains constant arc gap, free from hiss or flicker. A trim of carbons one hour and 20 minutes at 21 volts and 45 amperes.



Horizontal masking control. Can be angled at 45 degrees in each direction. Color boomerang contains six slides and ultraviolet filter holder.

Mounted on casters. Easily disassembled for shipping.

Write today for literature or free demonstration of any STRONG product

THE STRONG ELECTRIC CORPORATION

The world's largest manufacturer of projection arc lamps—the only lamps produced complete within one factory

87 CITY PARK AVENUE **TOLEDO 2, OHIO**

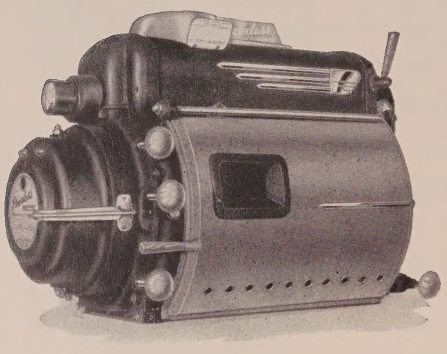
7 out of 10 choose

Peerless MAGNARC

TRADE MARK REG.

1-KW TO 70 AMPS

"HY-AX" ARC MAGNET
"HY-LUMEN" REFLECTOR



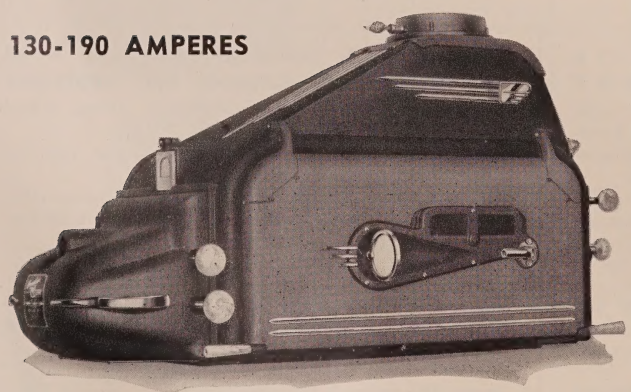
More light at 40 to 70 amperes than ever thought possible. . . . Equals and excels any reflector lamp to 85 amperes, whether they be unapproved water-cooled or resurrected "Hi-Lows". . . . Highest ratio of *honest* screen lumens per arc watt . . . At 70 amperes, using an accurated Glass Hy-Lumen Reflector*, with a projector having an efficient revolving shutter, it develops the maximum screen brilliance that can be used without a heat filter at no risk of film damage. . . . Operating costs under these conditions are far below that of 85-ampere lamps.

Magnarc Lamps assure 80% side-to-center (SMPE Standard) screen light distribution, not a deceptive 60% or "Hot Center." . . . They are all Und. Lab., Inc. listed. . . . They are *not* insurance hazards. . . . They are and have been for years "The First Choice" of large and small theatres, drive-ins, and the motion picture industry.

*Similar results are *not* guaranteed if *all-metal reflectors* are used.

"FIRST WITH THE FINEST"

130-190 AMPERES



Peerless HY-CANDESCENT

TRADE MARK REG.

NEW MAGNETIC STABILIZER

This modern lamp produces all the light there is. . . . It is the standard equipment of the nation's largest and finest theatres. . . . Used by 90% of the largest Drive-In Theatres.

It is the "Omega" for maximum screen brilliance . . . Nothing can even approach it in *white* light volume when used with projectors that have efficient revolving shutters.

Assures satisfying projection for Drive-Ins regardless of the size of the picture, length of throw, and under all weather conditions. . . . They are Und. Lab., Inc. listed and, therefore, *not* insurance hazards. . . . Heat filter assures no risk of film-heat damage at maximum arc amperage and maximum screen lumens.

"WHY EXPERIMENT?"

J. E. McAULEY MFG. CO.

552-554 WEST ADAMS STREET
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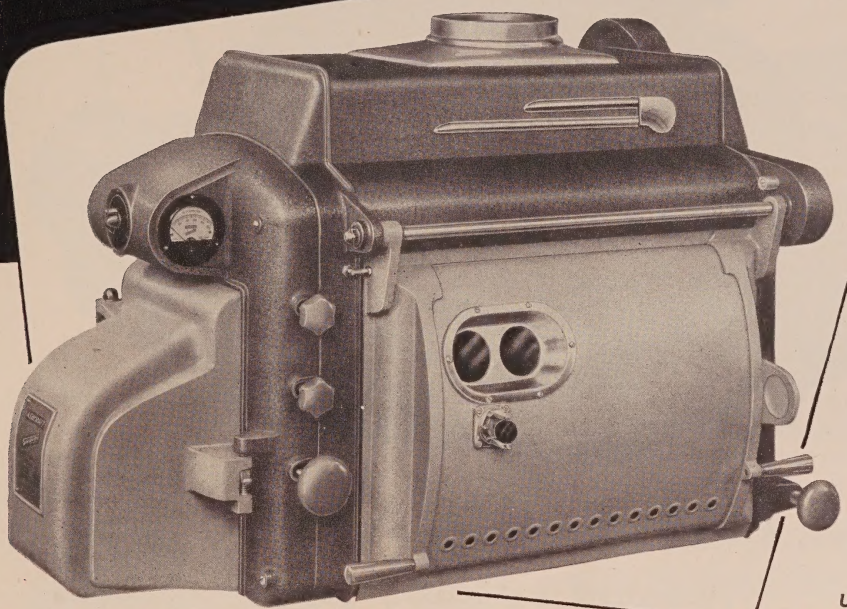
MODERNIZE YOUR PROJECTION WITH ASHCRAFT SUPER HIGH "100"



10mm ROTATING CARBON • 85 TO 110 AMPERES • 16" f:1.9 REFLECTOR • WATER COOLED CARBON CONTACTS • FULL BALL AND ROLLER BEARING

Approved and listed by Underwriters Laboratory

BIG • POWERFUL • EFFICIENT

The ASHCRAFT SUPER-HIGH "100" has actually been proved to be the most powerful light for motion picture projection. Its 24,000 lumens projected at 105 amperes will guarantee the most brilliant pictures on the largest screens. We challenge anyone to produce more light.

Distributed by:

- INDEPENDENT THEATRE SUPPLY DEALERS
- CANADA: DOMINION SOUND EQUIPMENTS, LTD.
- FOREIGN: WESTREX CORP.

The ASHCRAFT SUPER-HIGH "100" does not need photo-electric cells, thermostats, relays or other gadgets. Perfection of arc regulation is attained through excellence of design. SIMPLICITY of construction has made this the most popular of all projection arcs.

C. S. ASHCRAFT MANUFACTURING COMPANY

36-32 Thirty-Eighth Street Long Island City 1, N. Y.

C. S. ASHCRAFT MANUFACTURING COMPANY
36-32 Thirty-eighth St., Long Island City 1, N. Y.

Gentlemen:

I am interested in a proof demonstration of the latest Ashcraft Super-High "100" in my theatre.

Please send literature on ☐ Ashcraft Super-High "100" ☐ Hydro-Arc ☐ C-70 ☐ Selenium Rectifier

Name_____

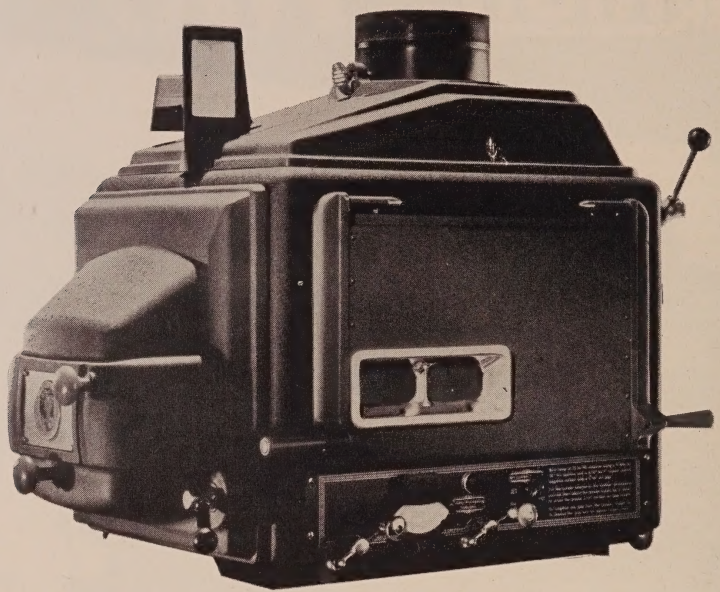
Theatre_____

Street_____

City_____ Postal Zone____ State_____

NATIONAL EXCELITE

75 TO 130 AMPERE HIGH INTENSITY REFLECTOR TYPE PROJECTION ARC LAMP



THE BIG LAMP

designed especially for

THE BIGGEST SCREENS

When pictures are projected by National Excelite lamps you can SEE the difference — for they are much more brilliant regardless of screen size.

Forced air cooling of the rotating positive carbon feeding mechanism assures low operating temperatures.

The positive arc crater is automatically maintained at the exact focal point of the 16½" elliptical reflector. This big reflector has an optical speed of f:1.9 to match the modern f:1.9 projection lens. The reflector holder and adjustment devices are an integral part of the rear door.

The Excelite burns a 9 mm x 20" high intensity positive with a 5/16" x 9" copper coated negative at 75 to 90 amperes. A bi-metal electronic tube automatically governs the speed of the separate motors which advance the positive and negative carbons.

Stable burning and complete combustion at the arc to avoid any black soot are attained by a jet of air directed just above the arc. White smoke, which would otherwise cloud the mirror, is also directed away from the reflector by this air stream.

Unit construction permits instant removal of the various components for cleaning and inspection.

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Equipment & Supplies For Every Theatre Need

NATIONAL THEATRE SUPPLY

Division of National • Simplex • Bladeworth, Inc.

for the *ultimate* in motion picture image quality . . .

BAUSCH & LOMB

BALTAR LENSES for CINEMATOGRAPHY

Leading professional cameramen, who are distinguished internationally for superlative motion picture photography, prefer Baltars. They know that Baltars meet their most exacting needs for 35 mm and 16 mm in black-and-white and color.

BAUSCH & LOMB

SUPER CINEPHOR LENSES for PROJECTION

To cameramen who film process backgrounds, and to theatre operators everywhere Super Cinephor means screen images of highest edge-to-edge brilliance and sharpness.

Write for complete information

BAUSCH & LOMB

OPTICAL COMPANY ROCHESTER 2, N.Y.

3 Reasons Why
MOVIES ARE BETTER

THE f/1.9
SUPER-SNAPLITE
6-ELEMENT ANASTIGMAT

COMPARE THESE ADVANTAGES!

ANASTIGMAT... Six elements for wide-angle, high-magnification, wire-sharp projection!

f/1.9... magnificent screen brilliance!

COATED OPTICS... greater light, sparkling contrast!

HERMETICALLY SEALED... trouble-free performance; dustproof, oilproof!

ANODIZED FINISH... can't flake off!

Wider-angle projection . . . higher magnification . . . utmost image quality are yours with the spectacular new Super-Snaplite!

Because it's a true anastigmat, the Super-Snaplite produces extremely high magnifications, in short throws, with exceptional detail — gives incomparable image quality in longer throws!

And this superb performance is *permanent* — thanks to the hermetically sealed, one-piece high-strength aluminum alloy mount! The Super-Snaplite is dust-proof, moisture-proof, oil-proof — never needs to be taken apart for cleaning! The anti-reflection coating is hard, durable, too!

Focal lengths range from 2" through 5" in ¼" steps. Speed of f/1.9 is maintained throughout. Get the complete details of the new Super-Snaplite by writing for Bulletin 203!

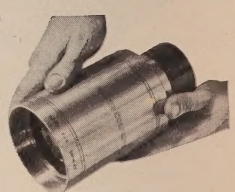
SUPERB FOR COLOR!

SNAPLITE SERIES II

Speed of f/2.0.
Hermetically sealed.
Coated lenses standard.

4" DIA. SUPER SNAPLITE

Speed of f/1.9 in 5" through 7" focal lengths.
Coated lenses throughout.



KOLLMORGEN Optical CORPORATION

2 Franklin Avenue
Brooklyn 11, New York

NATIONAL

TRADE-MARK

PROJECTOR CARBONS

FOR EVERY TYPE OF PROJECTION LAMP

Sold through Authorized Distributors

SCREEN LIGHT AVAILABLE FROM HIGH INTENSITY PROJECTION LAMPS*

Type of Lamp	Type of Carbon	Size	Maximum Recommended Arc Current Amperes	Arc Volts	Maximum Screen Lumens 90° Shutter	Maximum Screen Width with 9 Ft. Lamberts at Center— 75% Screen Reflectivity
Condenser Type	High Intensity Positive "Orotip" Cored Negative	13.6 mm x 22 in. ½ x 9 in.	150	78	9750	38.2
	"Hitex" Super High-Intensity Positive Heavy duty "Orotip" Negative	13.6 mm x 22 in. ½ x 9 in.	180	74	12,400	43.2
Simplified High Intensity	Suprex Cored Positive Suprex Cored Negative	7 mm x 12 or 14 in. 6 mm x 9 in.	50	37	5000	27.2
	Suprex Cored Positive Suprex Cored Negative	8 mm x 12 or 14 in. 7 mm x 9 in.	70	40	7000	31.6
"One Kilowatt" D.C. Arc"	Suprex Cored Positive "Orotip" C. Negative	7 mm x 12 or 14 in. 6 mm x 9 in.	40	27.5	3250	21.9

**(All data based on use of F/2.0 treated projection lenses)*

The terms "National", "Hitex" and "Orotip" are trade-marks of National Carbon Division

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High intensity lamps provide a greater volume of screen light than the older low intensity lamps. This allows a clear cut screen image to be shown in the presence of a safe and comfortable level of general illumination. Patrons entering the auditorium from the lobby find their seats without discomfort or embarrassment, while the lighter contrast between the screen and surrounding illumination adds to visual comfort in viewing the picture.

A further advantage of the high intensity arc for projection is the snow white quality of its light. Light from the low intensity arc is comparatively dull and yellowish. This distorts the hues of color features and detracts from the impression of realism which color is designed to create. High intensity projection reproduces all colors with great fidelity and gives a realistic quality to color features not otherwise obtained.

"ONE KILOWATT" ARCS

From the standpoint of the small theatre, the "One Kilowatt," carbon arc ranks among the most important advances in the art of motion picture projection. It enables the smallest theatre, at little or no increase in operating cost, to have the advantages of snow white projection light and the recommended level of illumination on the screen. It removes the edge enjoyed by those theatres having the more expensive types of high intensity lamps.

One of the most important objectives in preparing for future business is improvement in the quality and quantity of screen illumination, especially since increased production in color films is expected. No theatre will be a modern theatre without high intensity projection.

The "One Kilowatt" arc, without increasing operating cost, now allows the small theatre to give its patrons 50 to 80 per cent more screen light, more realistic color reproduction, and a quality of picture presentation unsurpassed by any theatre, regardless of size.

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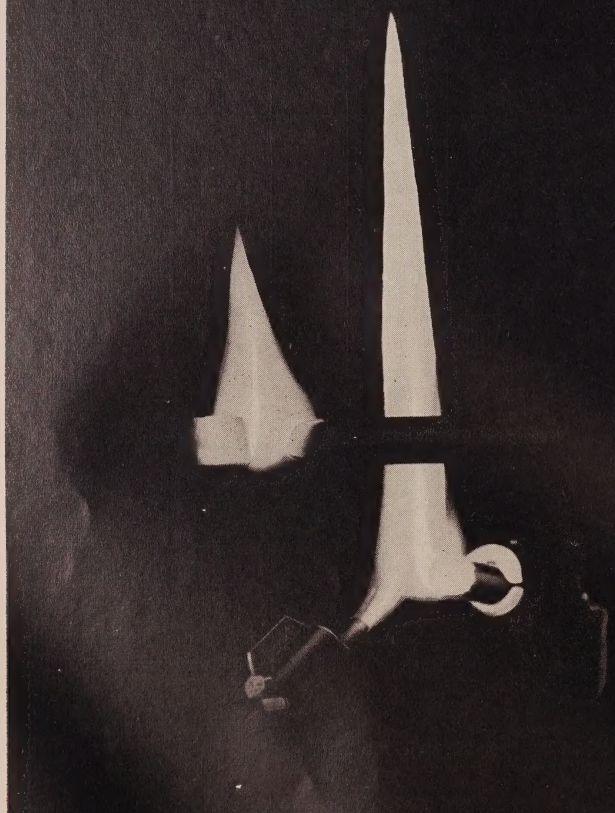

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AMPS.	TYPE		GRADE-DESCRIPTION
30-40	POS.	6 mm. x 12"	544C SC-CC
	NEG.	5 mm. x 9"	545C C-CC
1 KW	POS.	7 mm. x 14"	541C SC
	NEG.	6 mm. x 9"	545C-20 SC
40-50	POS.	7 mm. x 12"	544C SC-CC
	POS.	7 mm. x 14"	544C SC-CC
	NEG.	6 mm. x 9"	545C C-CC
50-62	POS.	8 mm. x 12"	544C SC-CC
	POS.	8 mm. x 14"	544C SC-CC
	NEG.	7 mm. x 9"	545C C-CC
62-72	POS.	8 mm. x 12"	544C-10 SC-CC
	POS.	8 mm. x 14"	544C-10 SC-CC
	NEG.	7 mm. x 9"	545C C-CC
65-75	POS.	9 mm. x 14"	544C SC-CC
	NEG.	8 mm. x 9"	545C C-CC
THE ARC LENGTH 6mm RECOMMENDED VOLTAGE FOR ABOVE TRIM 30 - 40 VOLTS			
70-85	POS.	9 mm. x 17½"	552 SC-UNC
	POS.	9 mm. x 20"	552 SC-UNC
	NEG.	5/16" x 9"	557 CC
85-100	POS.	10 mm. x 20"	252 UNC
	NEG.	11/32 x 9"	557 CC
95-115	POS.	11 mm. x 20"	552 UNC
	NEG.	9 mm. x 9"	557 CC
	NEG.	9.5 mm. x 9"	557 CC
ARC GAP CONFORM TO MANUFACTURING DATA ABOVE RECOMMENDED 50 - 60 VOLTS			
115-125	POS.	13.6 mm. x 22"	552 UNC
	NEG.	7/16" x 9"	557C CC
125-135	POS.	13.6 mm. x 22"	553-01 UNC
	NEG.	7/16" x 9"	557C CC
130-145	POS.	13.6 mm. x 22"	553 UNC
	NEG.	1/2" x 9"	555C CC
	NEG.	7/16" x 9"	557C CC
150-180	POS.	13.6 mm. x 22"	581 UNC
	NEG.	1/2" x 9"	555CN CNC
ARC GAP CONFORM TO MANUFACTURING DATA ABOVE RECOMMENDED 60 - 70 VOLTS			
10-16	POS.	10 mm. x 8"	252 C-UNC
	NEG.	7 mm. x 8"	259 S-UNC
15-28	POS.	12 mm. x 8"	252 C-UNC
	NEG.	8 mm. x 8"	257 C-UNC
20-30	POS.	13 mm. x 8"	252 C-UNC
	NEG.	9 mm. x 8"	256 C-UNC

SC: Star Cored
CC: Copper Coated
C-CC: Cored—Copper Coated
UNC: Uncoppered
CNC: Copper Nickel Coated
S-UNC: Solid—Uncoppered
C-UNC: Cored—Uncoppered

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HEATING, VENTILATING *and* AIR CONDITIONING

1950-51

Evaporative Cooling for Theatres

A Simple and Inexpensive Air Conditioning Method Proves Suitable for Operation in Many Localities

A satisfactory cooling and ventilating system is an absolute requisite for any theatre which professes to be modern, for wherever a large number of people are congregated there must be sufficient circulation of air, particularly during the warm months of the year. Due to the public's widespread acceptance of air conditioning as a prime comfort agent, patrons of today instinctively expect to find a pleasantly cool atmosphere in the theatres which they visit. Those houses which have failed to install efficient cooling systems have inevitably suffered painful losses at the boxoffice.

Several different types and styles of summertime cooling and air conditioning are available to the theatre. Varying widely in basic design and equipment requirements, they provide a complete range of ventilation or cooling results commensurate with the size and type of theatre to be conditioned.

First of all, just plain ventilation with sufficient air movement to effect a perceptible reduction in effective temperature is still utilized in many of the smaller houses. For those theatres in cooler localities, and where night-time operation is customary, plain ventilation can accomplish some remarkably good results.

Secondly, evaporative cooling, one of the most frequently employed systems now installed in theatres, provides not only that same drop in effective temperature, but an actual reduction in dry-bulb temperature as well.

Next, cooling by means of well water, either through air washers or coils, is a commonly found type of system wherever cold water at temperatures of 55° or lower is available.

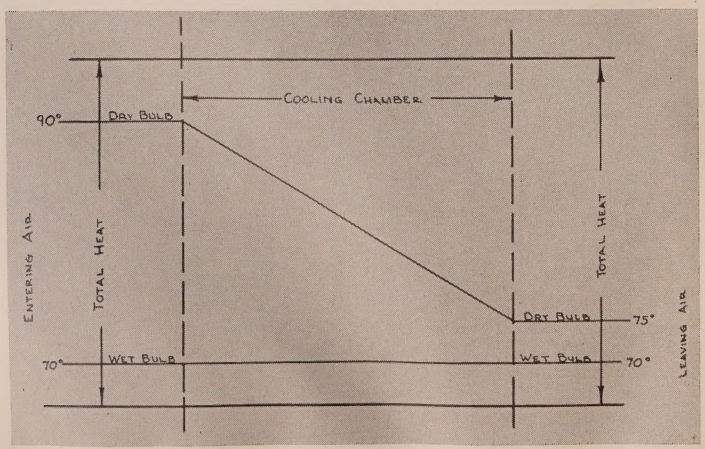
BRIEF: *There are . . . at the present time . . . hundreds of theatres equipped with evaporative cooling . . . which involves a simple exchange of energy between air and water . . . without actual loss or gain of heat in an engineering sense . . . Although particularly suitable for theatres containing up to 800 seats, there are a number of larger houses . . . in the 1,000 to 1,200-seat class . . . that have been successfully cooled by this method.*

Curiously enough . . . in spite of the fact that evaporative cooling has been in general use by theatres for over 20 years . . . many exhibitors and builders still know little about its basic characteristics . . . It is hoped that the following article . . . published to remedy this lack of knowledge . . . will lead to a better understanding of this cooling method with regard to: operational principles . . . equipment . . . installation . . . area considerations, etc.

Finally, refrigeration systems of many types, ranging from small packaged installations to large central station assemblies, are utilized at a steadily increasing rate.

The choice of the proper type of air conditioning or cooling system to be used in any theatre is dependent upon many factors. The results desired, the size of the house to be cooled, the amount of capital investment and operating expense commensurate with net earnings, and the locality of the theatre itself all have a direct bearing on the question. It is not the purpose of this article to promote any one type of system about others, but merely to describe in a factual manner the methods of operations and results to be expected from one particular type of system—evaporative cooling.

FIGURE 1—How dry-bulb temperature is reduced while wet-bulb remains static in evaporative method.



OPERATIONAL PRINCIPLES

Evaporative cooling is that type of temperature reduction made possible through the evaporation of water when exposed to air. The rate of such evaporation depends upon the comparative dryness of the air, the amount of air motion, and other factors. The evaporative cooling system takes advantage of these basic physical principles and adapts them to its cooling cycle, accomplishing in turn a temperature reduction which is both actual and effective. It does not, in this process, remove heat in an engineering sense, although it does reduce the temperature.

Theory of Cooling Cycle

It is most interesting to examine the evaporative cooling cycle and see how it actually works. After all, it is the same cycle which the human body uses to keep cool (at least in part) on a hot day and has been employed in literally thousands of variations ever since man became a conscious individual. The actual physical principles involved in its operation are not overly complex, and, without getting too technical, we can easily see what takes place.

As is generally known, matter exists in three states—solid, liquid, and gas. Whenever any material changes from one of these states to the other a heat transfer is necessary. Such absorption or usage of heat is necessary to that change of state; the change cannot take place without it.

When a pound of water changes from liquid to a gas at ordinary temperatures, approximately 1,100 b.t.u. are required to make the change. This heat is obtained from the water itself, from the air which is absorbing the gaseous water, or from a heating medium, such as the fire under an ordinary coffee pot. However, for every condition of air, there exists what is known as a wet-bulb temperature, below which the water in contact with that air can never fall in temperature unless through some outside cooling medium. In evaporating, therefore, the necessary heat to make that evaporation possible cannot come from the water, but must come from the air into which that moisture is passing.

Illustrative Example

An excellent conception of the aforementioned process in operation is portrayed by Fig. 1. Here, air at a temperature of 90° dry bulb and 70° wet bulb is admitted into an evaporative system.

In the cooling or washing chamber, a certain amount of water is evaporated, due to the intimate contact between air and water droplets. The heat necessary to accomplish this operation must come from the air itself, and, as a result, the dry-bulb or measurable temperature, as seen on the conventional thermometer, is reduced. Fig. 1 illustrates that on the ordinary system it is reduced from a temperature of 90° to a temperature of 75°. The wet-bulb temperature of 70° in this particular case remains the same, however, indicating that no actual addition or subtraction of heat has taken place—merely a transfer of the form of heat. In other words, the sensible or ordinary thermometer-measuring temperature has been reduced, while the latent heat (that amount represented by water in the air) has been increased. The total heat, however, has remained the same.

The amount of such dry-bulb temperature reduction varies considerably with entering air conditions. While Fig. 1 shows a temperature of 90° dry-bulb and 70° wet-bulb with a resulting or leaving temperature of 75° dry-bulb and 70° wet-bulb, this is but one case among thousands. The ordinary evaporative cooling system will reduce the dry-bulb temperature approximately 75% of the difference between the entering dry-bulb and wet-bulb. Thus, if the entering temperature had been 80° dry-bulb and 70° wet-bulb, the temperature would only have been reduced 7½° for a leaving condition of 72½° dry-bulb and 70° wet-bulb.

Some further reduction in what is known as effective temperature is also accomplished in the system, due to air motion inducing a cooling effect upon the people in the audience. This effective temperature is not measurable upon the ordinary thermometer. It is, however, the temperature which the body actually feels when all factors of temperature, moisture content, and air motion are applied. Several additional degrees of such effective temperature cooling are usually obtainable through air motion in the evaporative cooling system.

Equipment

The equipment required for an evaporative cooling system in any theatre is usually quite simple and the parts readily identifiable. Fig. 2, for example, shows the heart of a typical system with a blower, pent house, hydraulic drive, motor, evaporative pad type washer, etc. Among these parts, the blower and washer are perhaps most deserving of further attention.

Blower

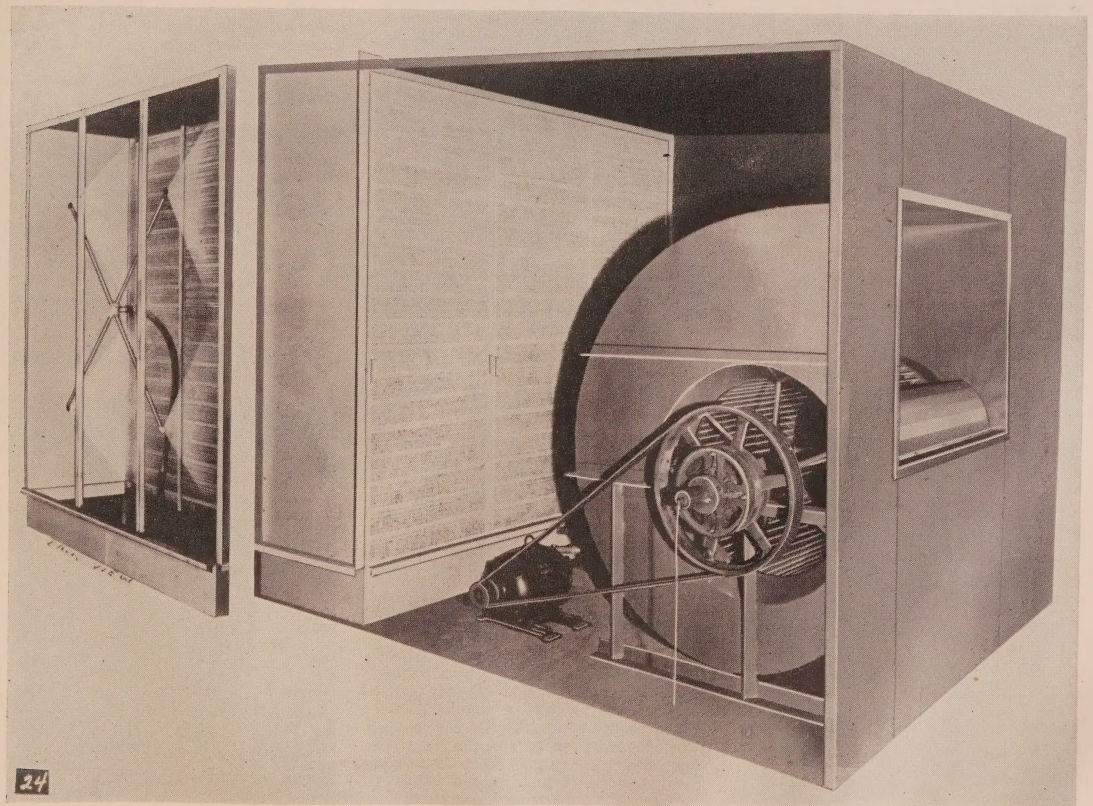
The ventilating fan or blower moves the air around and draws it into the cooling chamber. Thousands of blowers, such as the one illustrated in Fig. 3, are employed in theatre ventilation and cooling.

It is a serious mistake, in determining the size of a blower or blowers on a certain installation, to decide on a unit that is too small or to operate it at too high a speed. For instance, a 36″ blower equipped with a five horsepower motor may deliver enough air, but a 42″ blower driven with the same motor will deliver more air and do so more quietly. The additional cost of the larger blower will actually be absorbed in savings of power operating costs over a period of years.

The following table shows what many engineers consider the minimum cubic feet of air per minute per seat required to cool a theatre properly during the high excessive temperature months for each area (see Fig. 10). All blowers should be equipped with hydraulic drives or multi-speed motors, so the blower speed can be adjusted to fit temperature conditions:

Areas with 65° to 70° designed Wet-Bulb—65 c.f.m. per seat
Areas with 70° to 73° designed Wet-Bulb—70 c.f.m. per seat
Areas with 73° to 74° designed Wet-Bulb—75 c.f.m. per seat
Areas with 75° to 76° designed Web-Bulb—80 c.f.m. per seat

FIGURE 2—Typical evaporative cooling unit *(Photograph courtesy of National Engineering & Manufacturing Co.).*



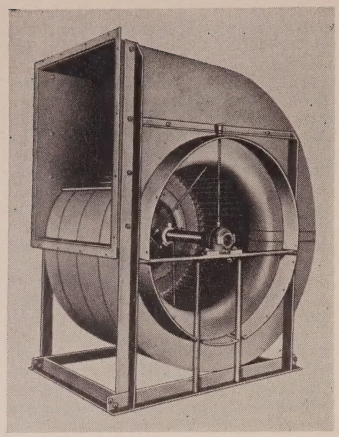


FIGURE 3—A commonly used type of blower. *(Photograph courtesy of U. S. Air Conditioning Corp.)*

Areas with 77° to 78° designed Wet-Bulb—90 c.f.m. per seat
Areas with 78° to 80° designed Wet-Bulb—100 c.f.m. per seat

The above table is for high temperature areas. In those areas where the normal dry-bulb temperature is 94° or less a 5 to 10% reduction in c.f.m. is justified.

Washer

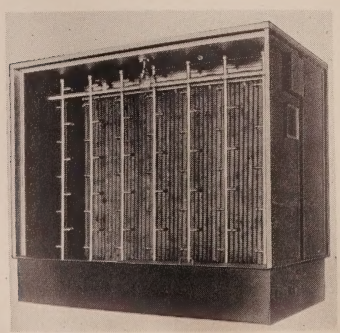
The actual heat exchange or evaporation takes place in an air washer, where a spray or fog of water is placed in intimate contact with the air passing through the chamber. Such an air washer is illustrated in Fig. 4. Another style of air washer is indicated in Fig. 5, where the water contact is not made through spray action but by passing the air through a saturated mat of fibres, which in themselves present a very large evaporating surface to the air passing through the unit. The fibres themselves are made of many different materials, including aspenwood, woven glass thread, and other materials.

Maintenance

One cardinal advantage of an evaporative cooling system is that it requires little maintenance. Once the equipment has been installed, about all that is necessary is to clean the washer out approximately once a month and refill with fresh water. If ball bearings are used in the blower and motors, one greasing per season should prove satisfactory, while sleeve bearings, if any, should be oiled about every 30 days. After the end of the season, the complete system should be thoroughly cleaned, repainted, and closed up as much as possible for protection against the winter weather.

When the system is put back to operation in the spring, the pads should be checked to see whether repacking is necessary. The tank is then filled with water, and all bearings are greased or oiled. Finally, the pump should be started and an inspection made to determine whether all spray nozzles are working satisfactorily.

FIGURE 4—An air washer with spray action. *(Photograph courtesy of U. S. Air Conditioning Corp.)*



Installation

In spite of the fact that a good number of theatres have been equipped with evaporative cooling, many theatre operators, architects, and builders know little about the important details to be considered in making an installation which will do the job in an expert fashion.

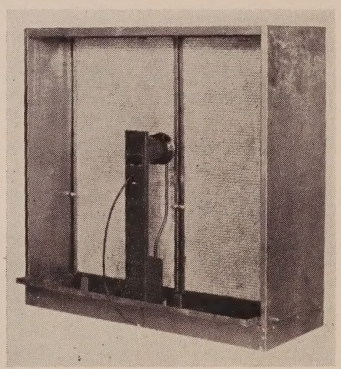


FIGURE 5—An air washer with mat of fibres. *(Photograph courtesy of U. S. Air Conditioning Corp.)*

Typical Roof Installations

Fig. 6 shows both top and side views of a typical roof installation. While theatres are often equipped with two separate evaporative cooling systems, this illustration may well be of interest to theatre operators contemplating a new evaporative cooling installation where only one large unit is necessary. By using two separately regulated pumps on the air washer a very satisfactory humidity control is possible during high humidity periods.

Another example of a roof installation may be seen in Fig. 7, where the cooling element (screen rotor) continuously exposes an evenly wetted surface to the air flow, maintaining a constant cooling effect. The water that is exposed to the air is in the form of a film held on a golden bronze screen. The screen is corrugated at an angle, and the corrugations, acting as troughs, drain the excess water into the unconditioned air side of the tray as the rotor revolves; thus, the possibility of moisture entrainment and the resulting deposit of raw water in the space to be cooled is eliminated.

Supply Grilles

Fig. 8 illustrates the customary type of supply grille used in the theatre to control the air stream passing through the auditorium. It is customary to place such supply grilles on the proscenium arch so as to allow a straight projection of air from front to back, allowing exhaust through the doors of the auditorium or through gravity vents in the ceiling at the rear end. It can thus be seen that a horizontal flow of air is obtained.

The adjustable blades of the grille allow control of the placement of this air so as to achieve uniform coverage. Perceptible air motion in the case of the evaporative cooling system is greatly desired and is not felt as a draft or uncomfortable air movement because the temperature has not been reduced greatly and all patrons are facing the source of air motion.

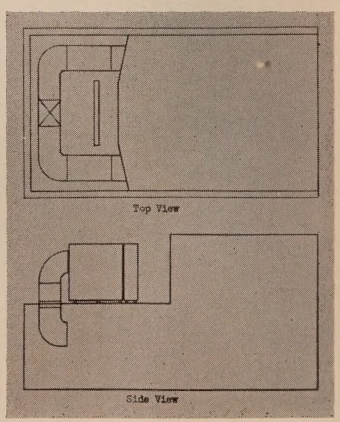
Controlling Grilles

The usual method for installation of an evaporative cooling system places the equipment up at the stage end of the house. Located on the stage proper, in the basement below, in the fly-loft above, on the roof, or in the rear, all such installations invariably lead their supply air to two or more controlling grilles located so as to project the air toward the rear of the house. Fig. 9 illustrates a typical installation, of which numerous varieties can be found, in the Beverly Hills Theatre, Dallas. Two 25-ton evaporative cooling units have been installed here.

Other Suggestions

According to some authorities on evaporative cooling, it is oftentimes advisable to have two double deflection grilles, located on each side of the proscenium arch and seven or eight feet above the floor, to effect better control of the air. It is claimed that a separate grille setting is frequently required for the front half of the auditorium and a

FIGURE 6—Top and side views of roof installation where only one large unit is really needed.



different one of the horizontal and vertical louvers for the rear to attain best results. Of course, two grilles will cost almost twice as much as the one grille with the same square footage, but it is felt that the added control is worth the extra expense.

Furthermore, some engineers point out that if air has to be exhausted through the entrance doors, or five feet above the patrons' heads, some areas in the auditorium will have dead air spaces. This problem does not usually arise in theatres with less than 600 seats, for deflection of the air with the grilles can be controlled from 60′ to 70′.

The prime difficulty is said to arise in theatres 100′ or more long, where a way must be found to get the air low over the back seats, once control with the blower has been lost. This is usually done with large exhaust fans mounted on the roof of the theatre and long flat ducts run down against the wall. If it is at all feasible, these exhaust ducts should be situated approximately 7′ above floor level. It is understood, of course, that the front doors are to be left open as often as possible to provide additional exhaust air.

AREA CONSIDERATIONS

While it is true that an evaporative cooling system functions at greater effectiveness in the warm and dry sections of the United States than in the relatively cool and moist areas, it can, contrary to popular belief, be successfully operated in those sections which have a designed summer wet-bulb temperature of approximately 79° or less (see Fig. 10), provided the system is properly engineered in every detail.

Special Cases

It is also true, however, that other factors concerned with general location should likewise be taken into consideration. In some cases, an evaporative cooling system may be operated with satisfaction in sections of the country where it is not ordinarily used, if such considerations as the size of the house and the time of its operation make such an installation feasible. For instance, in an area where the daytime temperatures are relatively warm, although the evening temperatures are quite cool, an evaporative cooling system could do an excellent job for night-time operation in small suburban theatres where the heat emission from the occupants might be quite high, in spite of relatively cool outside conditions.

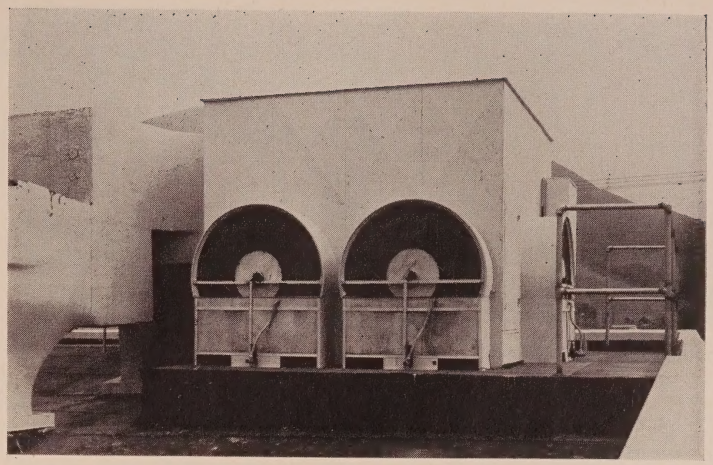


FIGURE 7—Installation of evaporative cooling system with screen rotors. *(Photograph courtesy of Farr Co.)*

FIGURE 8—Typical theatre supply grille. *(Photograph courtesy of U. S. Air Conditioning Corp.)*

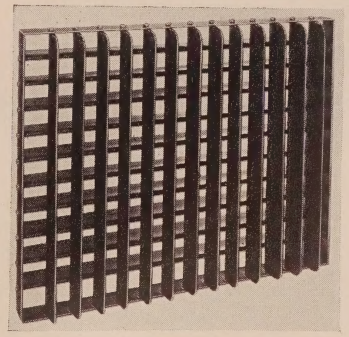


Table I—Results Obtainable with Evaporative Cooling Under 73° and 77° Wet-Bulb Conditions

Entering Air				Leaving Air of Cooler			
Dry Bulb Temp.	*Wet Bulb Temp.*	*Relative Humidity*	*Wet Bulb Depression*	*Dry Bulb Temp.*	*Effective Temp.*	*Wet Bulb Temp.*	*Relative Humidity*
105°	73°	20%	32°	81°	75°	73°	70%
100°	73°	27%	27°	79°	73°	73°	75%
95°	73°	33%	22°	78°	72°	73°	78%
90°	73°	43%	17°	77°	71°	73°	82%
85°	73°	56%	12°	76°	70°	73°	86%
100°	77°	34%	23°	83°	77°	77°	75%
95°	77°	43%	18°	82°	76°	77°	80%
90°	77°	55%	13°	81°	75°	77°	83%
88°	77°	60%	11°	80°	74°	77°	87%
85°	77°	69%	8°	79°	73°	77°	91%
82°	77°	80%	5°	78°	72°	77°	96%

Humidity

It should be pointed out that the term "humidity" has been overworked and often misused in approaching cooling problems. For example, it is quite common to find a relative humidity of 85% or more with a temperature of 80° or less on mornings that appear to be cool and comfortable in most areas during hot weather. When the humidity is up in high wet-bulb areas, the temperature is low, so sufficient air movement with proper distribution should provide a comfortable condition in a theatre.

Specific Wet Bulb Data

Fig. 10 shows what the summer wet-bulb temperature data are throughout the country, and indicates that evaporative cooling may be used on a wide scale. Of course, some differences, based on the air change method of computation, will exist in the engineering of systems installed in various sections of the United States. For example, a complete air change is required every two minutes in the western part of Oklahoma, Kansas, and Texas, but a 1½-minute change is needed in Dallas, Kansas City, Indianapolis, and Greenville, S. C. Similarly, a one-minute air change is required in St. Louis, Louisville, Cincinnati, Philadelphia, New York, and Boston, but a ¾-minute one is needed in areas, such as Savannah, Ga., which have a designed wet-bulb of 79°

Cooling Results in Two Cases

Table 1, which shows the temperatures of entering air and those of air leaving evaporative coolers under 73° and 77° wet-bulb conditions, exemplifies the satisfactory results which may be achieved with this type of system.

It should be noted, in connection with Table 1, that when the temperature is 82° with a 77° wet-bulb and a corresponding 80% relative humidity, proper air motion is all that is required to produce an effective temperature condition. Furthermore, when the dry-bulb temperature is 100° with a wet-bulb temperature of 77°, the outside air, after it

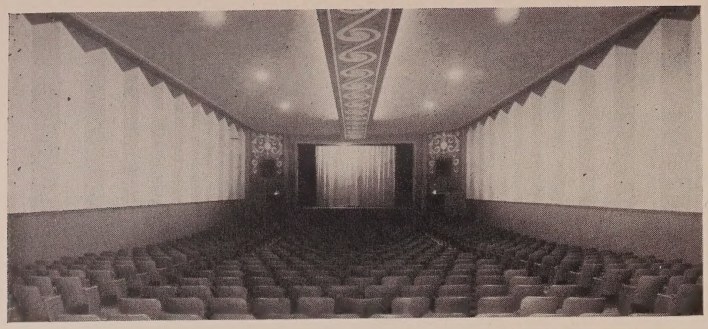


FIGURE 9—Controlling grilles installed on either side of the proscenium to cool the Beverly Hills, Dallas.

passes through the evaporative cooler, will have a dry-bulb temperature of 83° with a relative humidity of 75%, while the wet-bulb temperature remains the same or 77°. This cooled air, delivered into the theatre with proper velocity and distribution, will produce an effective temperature of 77°.

CONCLUSION

It must be distinctly understood that an evaporative cooling system is not a refrigeration installation and may not rightfully be compared to the latter in concept or results; any such comparison would be unfair and unjustified. The limitations of the evaporative cooling system are well-known and can be readily discussed. It will not remove moisture from the air, and the amount of temperature reduction is entirely dependent upon outdoor weather conditions. It uses a 100% supply of fresh air at all times, and must supply air to the theatre in greater quantities than any other type of system.

On the other hand, however, an evaporative cooling system is a relatively simple and low-cost installation. Service troubles are at a minimum because there is very little complex machinery in its equipment. Water costs are low, since the quantity of water used is represented only by that amount evaporated away into the air. A normal and usually attained result is a temperature reduction within the theatre proper of 10° or more when outside weather conditions are are 90° or above. In some localities a great deal more cooling than this will be possible; in extremely damp areas perhaps considerably less will be attained.

When all is said and done, the evaporative cooling system does have a definite part in theatre air conditioning. It has proven to be a particularly advantageous means for obtaining satisfactory cooling at a low-budget level in the case of the smaller theatre operating on a partial or night-time schedule.

It is well worth repeating that an evaporative cooling system must be just as carefully chosen and designed as to its size and installation as any other type of system. It has far too often received a black eye because of a wrong choice of equipment, improperly applied and of insufficient capacity. Properly designed and operated, an evaporative cooling system can be put to work in a satisfactory and wholly acceptable manner for many theatres.

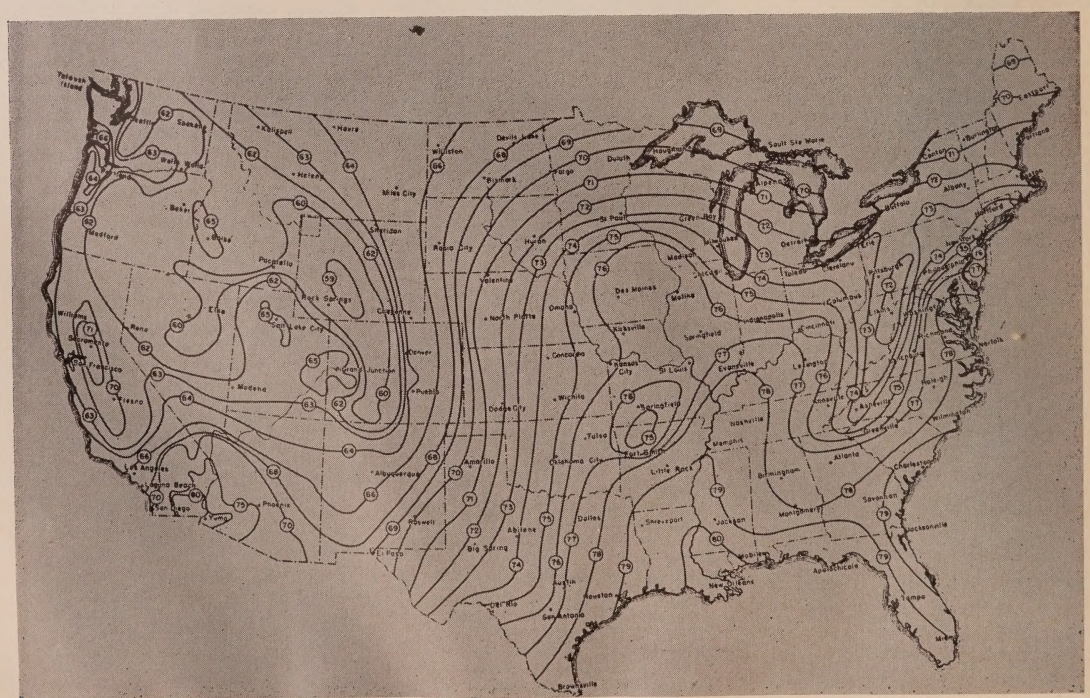
* * *

Acknowledgments

The Editors of THEATRE CATALOG wish to express their appreciation to the following for supplying the background material contained in the forgoing article:

1. **L. P. Hanson,** Vice-President in Charge of Sales, United States Air Conditioning Corporation.
   NOTE: *While this firm was one of the early evaporative cooling manufacturers, its main effort is now concentrated on the production of refrigeration equipment for theatre use.*
2. **H. F. Rodick,** President, National Engineering and Manufacturing Company.
3. **G. R. Holtz,** Farr Company.

FIGURE 10—Map showing summer wet-bulb temperatures throughout the U. S. indicates that evaporative cooling may be used in many localities successfully. The wet-bulb temperatures shown will be exceeded not more than 5% of the total hours during June to September, inclusive, of a normal summer.



Preventing Corrosion in Air-Conditioning System*

Chemical Compounds for Warding Off or Reducing Destructive Formations Are Helpfully Analysed

By W. J. RYAN
Technical Manager, Water Service Laboratories, Inc.

Operating air-conditioning and refrigerating systems is easier when corrosion is kept under control. Beyond the direct damage it does from contact of water and brine with the equipment—pipelines, pumps, spray chambers, cooling towers, condensers, etc.—there is the effect the corrosion products have on performance. Rust and bits of corroded metal clog up spray nozzles and heat-exchanger passes.

The problem is aggravated by electrolytic or galvanic action at points of contact between the different metals used in construction of the equipment. Let's look at the factors involved and the steps to control corrosion.

Raw Water

Most natural waters are corrosive to metals, especially the softer waters and those containing only small amounts of alkaline salts in solution. Artesian-well waters tend to be particularly corrosive because they carry such large quantities of dissolved carbon dioxide (CO_2). This natural corrosiveness of water increases in cooling towers, air washers and evaporative condensers because water absorbs air and impurities in it—carbon dioxide, sulphur dioxide from smokestacks, etc.

Most effective treatment for water in air-conditioning systems involves (1) raising pH with an alkali (2) forming a passivating film on metal surfaces by adding sodium chromate. Complete corrosion protection results from keeping the proper concentration of chromate in the water, plus a pH of about 8.5 at all times. To do this means frequent water analyses and regularly adjusted feeding of chemicals.

Control of pH has a direct bearing on rate of corrosion. Without going into the derivation of the term pH it can be stated that, within limits, the higher the pH, the less corrosive the water, and vice versa. Most city waters have a pH of about 7.0 unless the city applies some special treatment to its water. If it adds some material like lime or sodium silicate, the pH will probably be 8.0 or a little higher. In steam boilers where alkaline chemicals are added to prevent scale and corrosion, boiler-water pH is usually between 10.5 and 11.5, or higher.

Let's see what happens to the water in air-conditioning equipment. Air washers, Fig. 1, pass air through a chamber where water circulates as a spray. The water has undergone cooling in a refrigerating system. The cold-water spray washes dust and impurities out of the air and condenses some of the entrained moisture. This cooling and lowering of the humidity in the air is one of the primary objectives in comfort air conditioning.

But this spray water continually absorbs carbon dioxide from the air so the pH falls and the water tends to become very corrosive. Unless chemical treatment is used to hold up the pH, corrosion can proceed apace. To a lesser degree, water passing through evaporative condensers or cooling towers experiences the same change in pH.

*Reprinted from, July, 1949 issue of POWER.

BRIEF: *Corrosion . . . in a cooling system . . . is one difficulty that need not be tolerated . . . Needless damage can readily be avoided by knowing the required chemical makeup of the circulating solution . . . be it water or brine . . . The important thing is to make it non-corrosive . . . and hold the concentration of the preventive compound at the proper level . . . by frequent water analyses . . . and regularly adjusted feeding of chemicals.*

The following article . . . written by an executive of an organization specializing in such problems . . . discusses the most effective treatments for corrosive water in air-conditioning systems . . . brine solutions in refrigerating units . . . and scale prevention under hard water conditions . . . It is obvious that a wise chemical treatment program . . . such as the author advocates . . . will give a longer lease on life to any type of air-conditioning equipment.

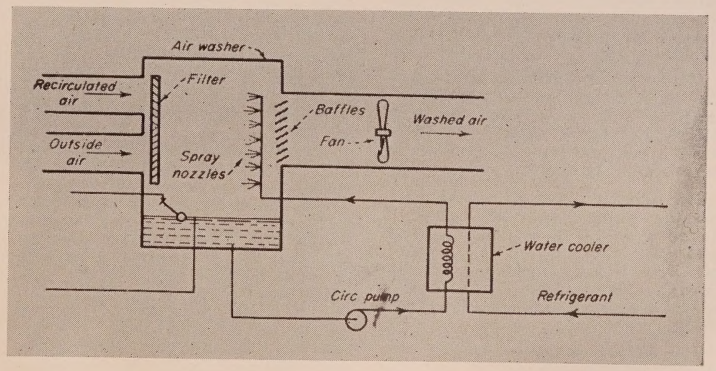
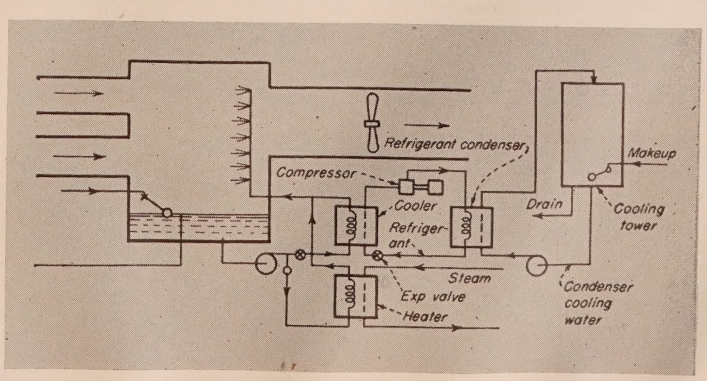


FIGURE 1—Simple air washer cools and lowers humidity of incoming air—a primary objective of air-conditioning—but the cooling water becomes highly corrosive.

FIGURE 2—When you take the absorbed heat out of the spray water with a refrigerant you add a condenser cooling-water circuit that needs protection against corrosion.



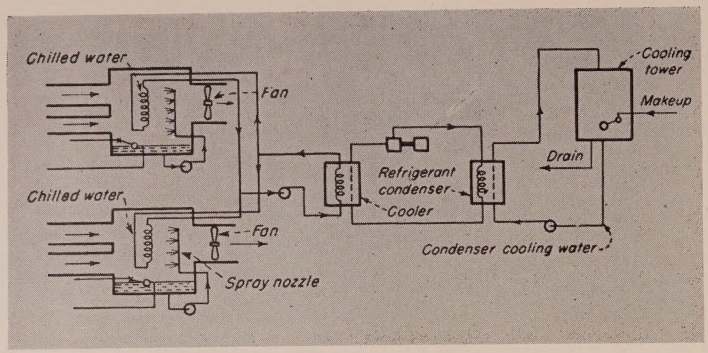


FIGURE 3—The chilled-water arrangement for removing heat from spray water is often a closed circuit where air is not absorbed and, hence, corrosion is no problem.

Corrective Measures

To prevent inside surface corrosion of air washers and water-circulation systems, a combination of chemicals—alkali and sodium chromate—should be fed into the spray water. Actually, sodium dichromate acts as supply for the chromate; it combines with the alkali to form sodium chromate.

In some plants these chemicals are fed intermittently in daily doses. Best practice employs a chemical feeder that operates whenever the spray water's circulation pump does. This maintains the water in the most favorable condition at all times.

Fig. 2 shows a further development of the simplified air washer in Fig. 1. Incoming air can be either cooled or heated. Cooling is effected by spray water, which goes through the cooler in the refrigerating system.

This system consists of a compressor for the refrigerating gas (ammonia, carbon dioxide or some other refrigerant) and a condenser for liquefying the gas. From here the liquefied gas passes through expansion valve to the cooler, where it expands to absorb heat from the spray water.

This process introduces another circulating-water system—the one that carries water for condensing the refrigerant. In very small plants this water may be drawn from the city supply and pass through the condenser and out to the sewer. Some cities have ordinances forbidding this use of water because it is so wasteful.

One way to conserve the refrigerant condenser water is to recirculate it through a cooling tower, Fig. 2. In the tower the water, flowing down over baffles and fill, comes in contact with an air stream and is thereby cooled. This contact with air lowers pH, and produces a corrosive water. Without countermeasures, corrosion damage in cooling tower, piping and refrigerant condensers may well become a problem.

A somewhat different air-washer arrangement, Fig. 3, employs a chilled-water circuit. Spray water is not directly cooled by the refrigerating system but, instead, sprays over coils carrying the chilled water in a closed circuit. Here the spray water needs chemical treatment because of its contact with air. But the closed circuit probably does not need this protection.

What about an evaporative condenser? Fig. 4 shows a system where the refrigerant is condensed in an evaporative condenser. A circulating pump keeps water moving through spray nozzles that play the water over the refrigerant coils. An air blast, forced through the chamber housing coils and sprays, cools the circulating water. In this arrangement chemical treatment is added to the two waters that come in contact with air: (1) the air washer's spray water (2) the circulating water in the evaporative condenser.

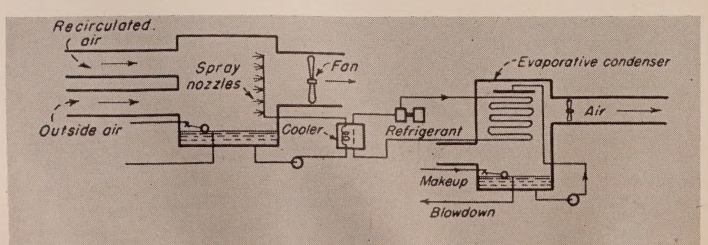
Brine Treatment

In refrigerating systems employing brine, sodium chromate provides an effective and economical defense against corrosion. It requires a chromate concentration of about 2000 ppm for calcium brine and 3200 ppm for sodium brine. Since chromate has an acidifying action, caustic soda may also be used to raise and hold pH of the treated brine at 7.5 to 8.5. At the same time, the caustic combats lowering of the pH caused by any absorption of CO_2. Periodic analyses and regularly adjusted chemical feeding are the only sure ways to prevent corrosion.

Ammonia escaping through a leak into the brine makes it too alkaline. If alkalinity tests indicate that this is happening the leak should be located and repaired as quickly as possible.

In handling chromates and caustic soda considerable care must be exercised. These chemicals can irritate or burn the skin or injure the face and eyes.

FIGURE 4—Circulating water in an evaporative condenser becomes corrosive by absorption of CO_2 and other acidic compounds from the air. Protection must be provided.



Scale Prevention

Suppose in addition to being corrosive, the water is hard, that is, contains large amounts of calcium and magnesium salts. Because of the evaporation that takes place in cooling towers, air washers and evaporative condensers, these mineral salts tend to concentrate in the same way as in a boiler. Eventually they come out of solution and form scale.

Over and above this scale is the coating that may form on heat-transfer surfaces from the dust particles, bacteria and pollen absorbed by water. Such organic growths give water an offensive odor, which in turn is imparted to the air. Proper chemical treatment can reduce such difficulties.

Just what does chemical treatment for scale prevention involve? There are several acceptable approaches. A zeolite softener on the make-up water supply can prevent or minimize scale troubles by softening the water. Surface-active materials, such as certain polyphosphates, may achieve the same result. Bleeding a small stream of water from the circulating system tends to keep the concentration of dissolved mineral salts below the point where they precipitate as scale.

Bleeding or blowdown, with other water losses, affect the amount of chromate and alkali needed for the anti-corrosion treatment. As an example, moisture condensed from air passing through the air washer, Fig. 1, drops into the well at the bottom of the chamber and causes a continuous small overflow. This overflow carries away some of the chemicals, and pH of the water drops unless a continuous automatic chemical feeder is provided.

In cooling towers some circulating water is carried off by drift or windage. In mechanical draft towers rate of such loss runs to about 0.2% of circulation rate. For natural draft this loss ranges to about 2% depending on wind velocity. Spray ponds have an even higher loss from this cause.

But no matter what the particular air-conditioning equipment used, in handling the water or brine an active, closely followed chemical-treatment program can extend service life by reducing or preventing troubles from corrosion or scale formation.

Maintenance of the Air Conditioning Plant

Practical Tips on Good Housekeeping for Trouble-Free Operation and Maximum Equipment Life

Basically speaking, every cooling plant comprises two main cycles—the air cycle and the refrigerant cycle. Since identical maintenance suggestions are applicabl to all ventilating systems, with or without refrigerants, the air cycle will be discussed first. This cycle is simply a duct system delivering cleaned air pumped by a fan to those localities to be cooled.

The fan is usually set up to pull fresh air in from the outside through a set of filters, which remove dust and soot; to push the air over the cooling coils, where it is lowered in temperature and moisture removed (dehumidification); and to propel it through the duct system into the auditorium, lobby, lounges and other theatre rooms.

In a majority of systems there are also return air ducts, which permit the re-use of some or all of the previously cooled air. On days when Old Sol is throwing down a barrage of heat, some savings can be effected by closing the fresh-air intake and re-circulating the inside air until the interior is cooled to the desired temperature. But, it must be borne in mind that, in order to dispel sweaty odors, and return oxygen to the used air, some fresh air must always be on its way into the occupied house.

Care of the Fan

Particularly important is the care of the fan—the most vital part of the air cycle. Periodically the blades should be scraped with a wire brush, removing rust and other surface soil. Then, for durable paint adhesion, the metal should be treated with a phosphoric acid metal cleaner, and then painted with red lead or zinc chromate before the application of the final heavy protective coat of paint. This identical treatment should be given the fan casings and any other metal parts of the system. In addition, bearings should be kept clean and lubricated with a dirt-free oil or grease, as specified by the manufacturer.

The main obstacles to good operation of the fan are corrosion, wear, and poor lubrication. Regular inspection should be made of the fan assembly, and evidence of damage from corrosion or vibration looked for carefully at this time. Lubrication should also be checked at every inspection. The motor should also be checked at frequent intervals in a search for signs of trouble.

CASE HISTORY: A theatre manager called up a theatre maintenance engineer and began grumbling about an exhaust fan in his house. For the life of him, he couldn't figure out why the darn thing didn't blow out more air. He had fiddled and tinkered around, looking for stoppages in the louvres and duct work, but, even after this assault, he was still up a blind alley. Bitter and frustrated, he requested the engineer to speed up the fan and said that he would rather be responsible for the price of a new motor — and pulley and belts — than be needled by his present limpid setup.

When the theatre maintenance engineer made his examination he found that there were no stoppages. Further detective work uncovered the startling evidence that the fan was running backwards and had been on this binge for the past eight months! That long ago the motor had been overhauled and two leads in the motor switchbox had gotten mixed up. By interchanging these, the engineer soon had the fan running in the right direction and properly ventilating the house.

BRIEF: ***In this highly technological day and age, the specialist in repair . . . who understands and can fix . . . the intricate machines which the advance of civilization has brought in its wake . . . is a revered "fair-haired boy" indeed . . . He is often so busy . . . tracking down faults in mechanical units . . . that it may be almost impossible for him to answer all calls that come his way . . . Oftentimes the cries for help he receives would not be necessary . . . if the trouble prompting them had been prevented by the use of a little common "horse sense" beforehand . . . on the part of the caller . . .***

Theatre air conditioning systems . . . for example . . . generally stand up well under all kinds of stresses . . . if given proper attention. A few simple maintenance procedures . . . as outlined in this article . . . will keep a cooling system in first-class shape . . . and do away with the necessity for a good many calls to the beleaguered repair man.

Belts

Most fans are belt-driven. In order to prevent their rapid deterioration, the belts must be kept taut and absolutely free of grease and oil. Loose belts are taken up by sliding the motor to a point where no more than one-half inch of play is discernible when it is pressed by a finger.

A handy rule of thumb to remember when tightening a V-belt is that a slack belt will feel dead to a hand thump and that a correctly tensioned belt will feel springy and lively. In plants where multi-belts are used, some belt manufacturers suggest that the position of the belts be rotated to insure longer life.

Care, however, must be taken when removing or installing belts to make certain that they are not too taut. Undue strain will break the outside strands. All belts are supplied with the manufacturer's name and belt size printed on them, usually in the form of code numbers. This data should be filed away to facilitate replacements.

CASE HISTORY: Late one sultry Saturday afternoon, the telephone jangled, and at the complaining end was another distraught theatre manager. He was so excited that he could scarcely relate the fact that a set of belts used to run an air-conditioning compressor had become overheated and burst into flames. In a short time, the theatre maintenance engineer was on the spot with knowledge, experience, tools and aspirins.

Things could have been worse. The compressor room was well-aired; no smoke had seeped into the public sections of the house. And nobody, with the noticeable exception of the manager, was in a panic. Here was the situation. The belts, of wartime vintage, had been allowed to become loose. Resultant friction from slippage had set them on fire. A set of spare belts in the engineer's kit soon remedied the defect and the air was cleared and freshened in a matter of minutes.

Air Ducts

It is extremely important that air ducts be checked periodically for loose connections and loose insulation. Access holes should be put into the ducts for the periodic removal of dust. This last, more than being merely good housekeeping, eliminates a very serious fire hazard. And last, but not least, fire dampers should be looked into similarly for proper closings.

CASE HISTORY: In a theatre in South Philadelphia, a sudden rash of flickering spots on the screen evoked visions of fire in the minds of some 20 of the 200 members of the cinema audience. They promptly tumbled out of the nearest exits. One of the safety-minded customers telephoned the Fire Bureau; and a few moments later two fire companies shrieked to a stop outside. Finding the show going on as usual, the disappointed firemen wanted to know what the fuss was all about.

By a grotesque coincidence, turning on the air-conditioning system for the season created clouds of dust, which, when reflected on the screen, made the place look highly combustible, the manager told them. Here, dust, had become a potential instigator of panic.

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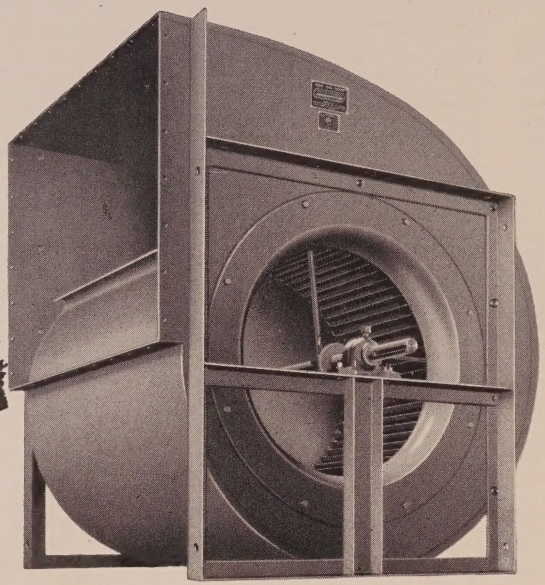

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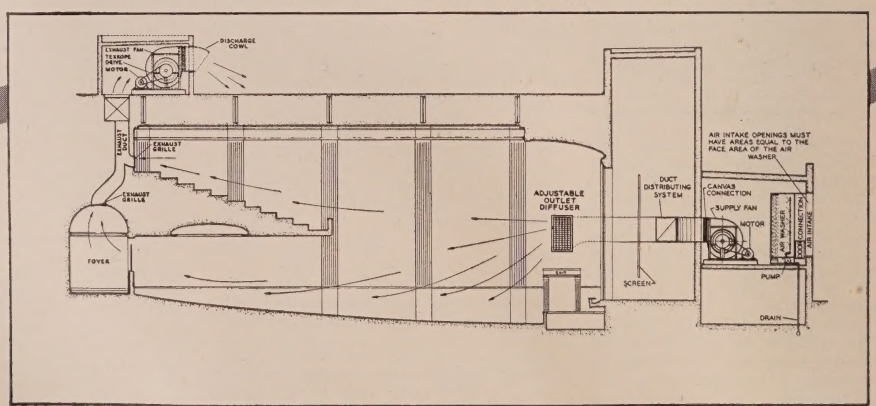

National Theatre Air Washers, used in connection with National Theatre Fans, form a complete, compact and economical method for theatre comfort cooling.

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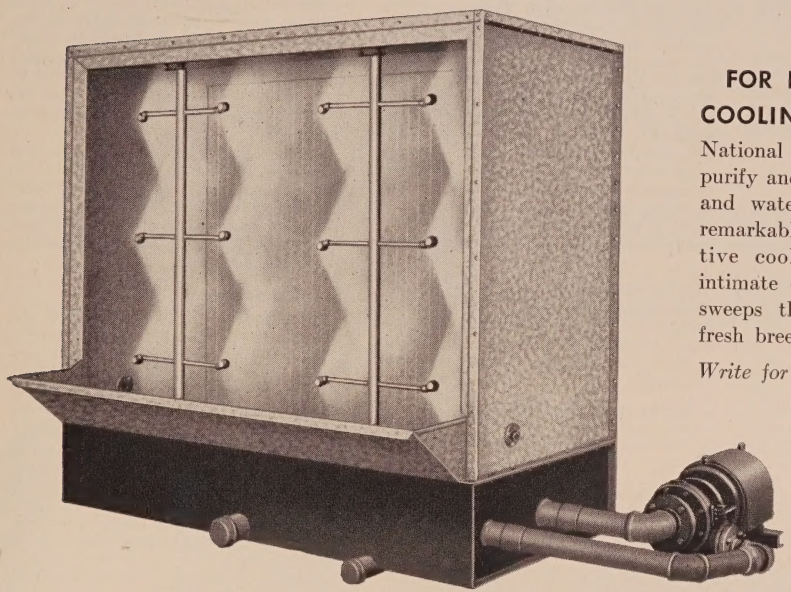

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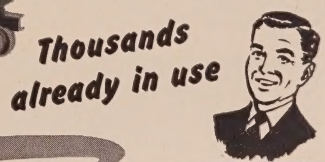
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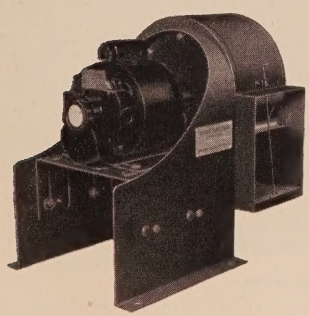

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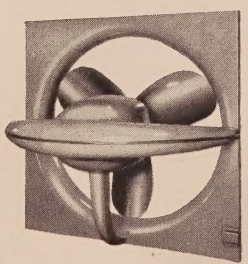

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Filters

Air filters are a necessary component of the air cycle. There are two types of filters—the throw-away type, which is discarded after usage, and the permanent, all-metal type. The latter, although it costs three-and-a-half times as much as the throw-away, is the best buy. It will prove to be the most economical throughout its five-to-ten year lifetime.

And remember, it costs money to tear down a system. This is necessitated most frequently by dirt in the filters. Properly cleaned, and they can be cleaned, using the right tools and the right technique, the permanent type will justify its original cost.

Some Theory

The refrigeration cycle revolves about the compressor, condenser, liquid receiver and cooling coils, plus the various conducting gas and liquid pipe lines. The compressor, the heart of the refrigeration cycle, pumps the hot gas or refrigerant at high pressure through the discharge line to the condenser.

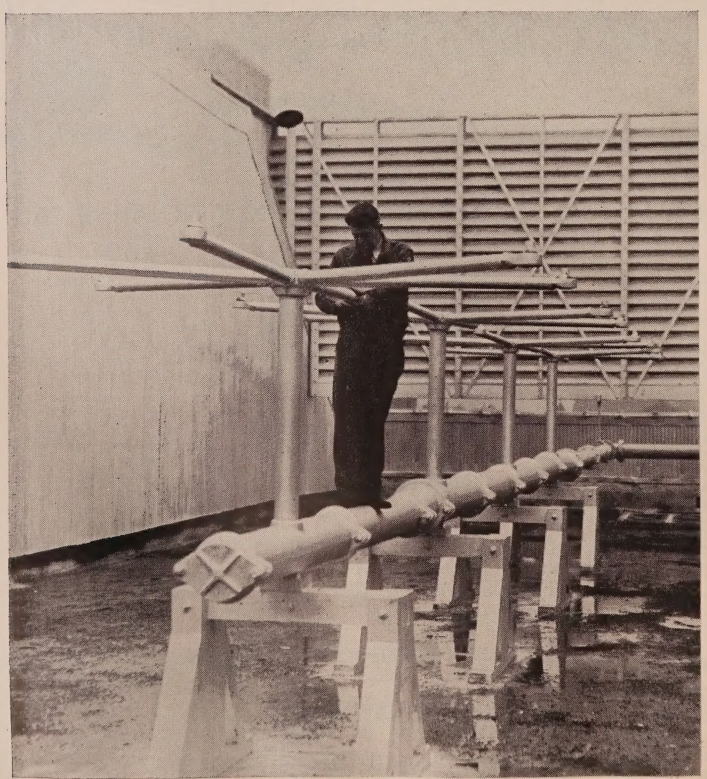
The outside of the condenser tube wall is cooled by water, which condenses the hot gas in the tube to a liquid, at high pressure. This liquid flows to the receiver and thence through liquid lines to expansion valves, which, essentially, are needle valves. The valves allow only a small discharge of the refrigerant to flow through the cooling coils or evaporator. Here pressure is reduced. The liquid expands, becomes gas, and the temperature drops.

As the refrigerant comes through the cooling coil, it is vaporized by the heat of the coil. (The heat is from the air of the theatre, the air that will be redistributed.) This gas flows back to the compressor through the suction line, and the cycle is repeated.

CASE HISTORY: During a hot spell, the air-conditioning system of a 1000-seat house was short-cycling badly. The main trouble was the water supply. The kids were everywhere under the fire hydrants, and there just wasn't enough water to go around.

The water pressure, abnormally low, was unable to force water up to the evaporative condenser, set up 54 feet above the street. Further, there was no "make-up water" to feed into the "evap." This meant dragging buckets of water up four flights of stairs. What to do? The solution—and the only one: Put in a small pump in the water line feeding the condenser. That's what the theatre maintenance engineer did. The pump, actuated by the pressurestat, went to work whenever the water pressure fell too low to push itself upstairs.

HUGE QUANTITIES OF WATER are required to dissipate the heat of the compressor action in any large central plant system, with proportionately smaller quantities in smaller systems. Cooling towers such as below are capable of spray cooling 900 gallons per minute, and while relatively trouble free in operation they also require periodic cleaning, painting and maintenance care.



The Compressor

The compressor is the most vital part of the entire cooling system. It requires experienced, intelligent handling. The crankcase of most compressors is fitted with an oil-level gauge or bullseye. The crankcase must hold just the right amount of oil. Too little oil will cause the bearings and other moving parts to bind. This condition, of course, will occasion excessive wear and overload on the motor.

On the other hand, over-filling of the crankcase will cause slugs of oil to be tossed about—and pounding. A noisy condition will result too, from broken compressor valves. These can be detected by testing for temperature differences in the cylinder heads.

The Condenser

Heat removal is the condenser's job. The heat must be taken away from the refrigerant in order that it can be converted from a gas to a liquid. There are three types of condensers: air, water, and evaporative. In theatres, the evaporative type is used most commonly.

Since it combines the functions of the air and water types, the evaporative condenser is similar in its maintenance needs; and tips for its care will apply to all three types. The evaporative condenser takes away large quantities of heat by using very little mechanically circulated water and air. As a result, less power is required to run the system.

To get the utmost out of this most efficient piece of apparatus, it is good practice to treat the water with a softening solution. This will help to keep the solid matter from forming scales on the coils. A shortage of water over the coils will cause high head pressure and short cycling.

Short cycling can be due to dirt in spray heads, to a stoppage of the circulating pump on the condenser, or fans, strainers, and coils. It is difficult to overemphasize the importance of keeping the cooling coils, over which the air is passed, free from dust and dirt. Dirt acts as an insulation. A heavy crust of it can be removed properly only by using a high-pressure spray treated with a cleansing agent.

Care, too, should be exercised in seeing to it that the condensation pan drains are open. Stagnant pans will give off unpleasant odors. And an overflow would be damaging to the building.

Conclusion

These selected tips on maintenance, aided and abetted by true case histories, make it very plain that: there are a vast number of "bugs" that can foul up complex air conditioning equipment; preventive maintenance is the most economical way of taking care of the air conditioning plant; and when something does go wrong, the quickest way to get the machinery fixed and the surest way to avoid high blood pressure is to reach for the telephone and call up the nearest theatre maintenance engineer.

Always a

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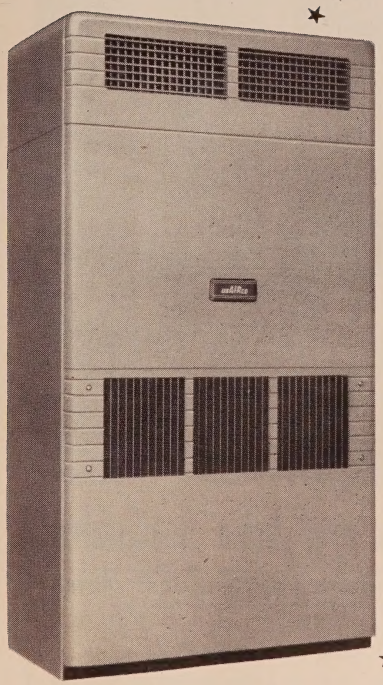

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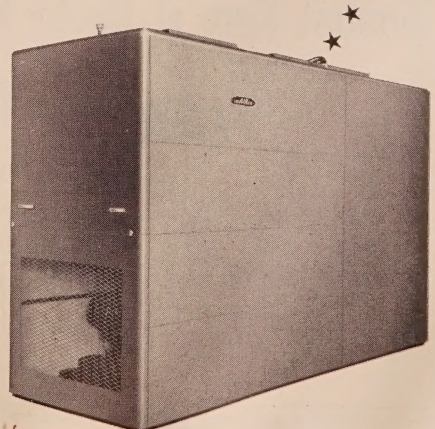

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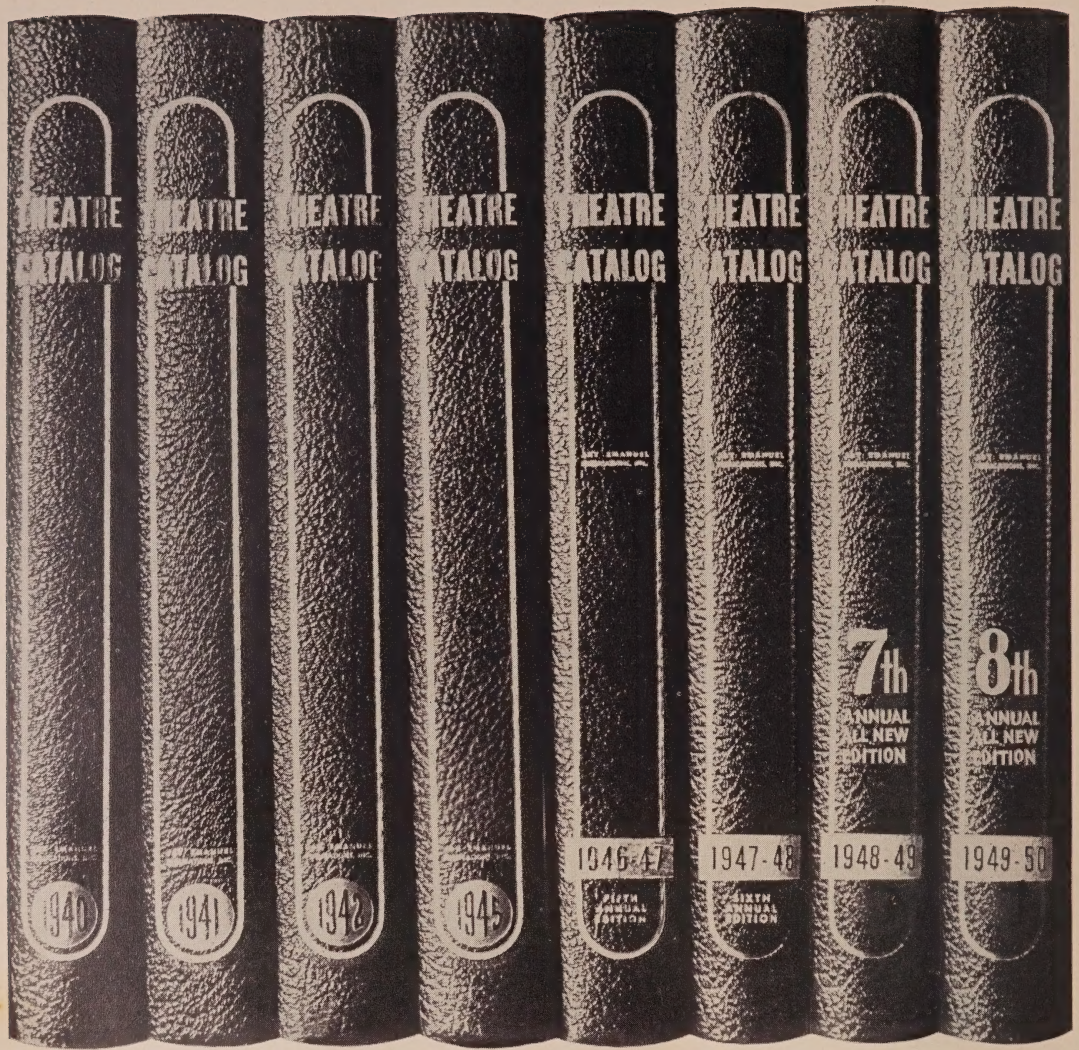

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NEW PRODUCTS, SUPPLIES, *and* SUPPLY DEALERS

1950-51

New Introductions During 1950

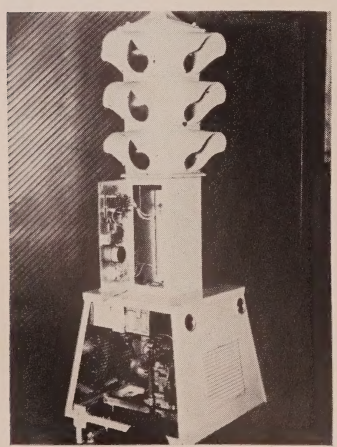
Brief Thumbnail Descriptions of Selected Products With Interesting Possibilities

BRIEF: *Space permits only cursory presentations of some . . . and only those that seem to have unusual idea value are here outlined . . . The objective in this survey is to give the industry some recorded fact about available products and supplies that may not warrant the fuller analysis of specific surveys of their own.*

FOR DRIVE-IN THEATRES

Portable Traffic Signal

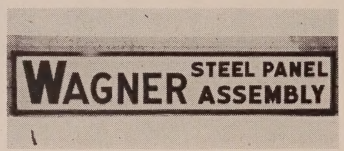
A portable traffic signal, with its own generated power supply and said to be the only known one of its kind in existence, is mounted on rubber-tired dolly wheels that enable it to be readily towed to any spot where emergency traffic control is needed, such as at accidents, fires, parades, football games, and drive-in theatres.



Standing 90 inches high, the portable signal has a 400-watt Onan electric generating plant installed in the base which produces the 110-volt current necessary to operate the control and signal. Designed to operate as a conventional signal light during normal operation, the unit can, however, be switched over to such a position that the light will burn red continuously on all four sides.

Drive-In Display Panel

A new patented changeable copy display panel, said to be designed especially to fill the attraction board needs of



modest drive-in theatres, has been announced by Wagner Sign Service, Inc. Illumination can be provided by spotlights, or existing lights can be utilized.

The unit consists of a series of porcelain enameled stamped metal panels that comprise both the background and letter mounting arrangement, and also includes an attractive porcelain enameled metal border frame. These displays are available in any length, in multiples of five feet, and in any height in the multiples of seven inches.

Substantial openings permit adequate drainage. Due to the slotted method of mounting letters, it is claimed that they cannot freeze to the background. Designed to accommodate Wagner aluminum or colorful plastic letters, the panels can be inexpensively assembled and installed on the job. Letters mount directly on the flanges in the background, and no extra rods or other attachments, which might weaken the sign, are required.

Stainless Steel Swimming Pool

In addition to the outstanding advantage of installation without foundations, a stainless steel swimming pool, manufactured by Standard Swimming Pool Corporation, is said to offer long life with very little upkeep required. Rusting, corrosion, weathering, and damage from frost heaving are readily eliminated by the durability of the stainless steel construction. Furthermore, since algae and other forms of scum do not form easily on the smooth metal surfaces, the water remains clean indefinitely, according to the manufacturer.

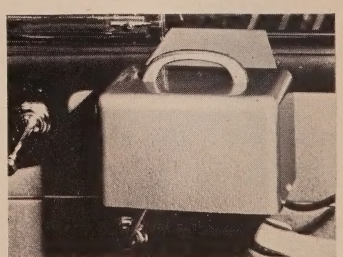
The gutter drain of the pool is arranged to vary the level of the water between the maximum depth and a minimum depth of 2½ feet. This feature was incorporated to diminish the hazard factor when children are using the pool.

The pool is delivered in sections which may be bolted together at the installation site. Although the standard size is 15 by 30 feet, the pool can be enlarged without difficulty by adding more sections. This unit appears to offer good possibilities for installation in drive-in theatre playground areas.

Drive-In Heater

A new kind of in-car heater for outdoor theatres, manufactured by Wesix Electric Heater Company, is a helical coil type operating at 400 watts, 120 volts, a.c. The fan has a centrifugal type blower which is claimed to provide 15 cfm with a totally enclosed shaded pole motor.

The baked enamel case is seamless with rounded corners and a hanger to fit easily on the car door; a handle is optional at no extra cost. Regular, coil, or burglar-proof cords are available. According to the manufacturer, the switch and cord may be installed under side of heater, if desired.



The total weight of the heater is only 7 lbs., 6 oz., with the following dimensions: 8″ wide, 5″ deep, and 5″ high. The unit may also be supplied in 110 or 220 volts and 300 or 400 watts at the same cost, according to the company.

Stadium-Type Chair

An attractive, new stadium-type chair, designed for use in drive-in theatres, has been developed by the Ideal Seating Company. Said to be engineered so as to eliminate tearing and pinching hazards, the chair is durably constructed throughout and affords maximum comfort for its type. It can be furnished for either floor or riser installation.

The wood slats in the back and seat come in natural color or durable enamel finish, while the gray iron standards are in baked enamel. The chair is equipped with ball bearing hinges and rust-resisting hardware.

Compact Water System

A space-saving, one-unit water system, developed by Jacuzzi Bros., Inc., is now being marketed nationally.

The unit consists of a ten-gallon, stainless galvanized steel pressure tank under which is concealed a close-coupled jet pump and motor unit. The entire outfit stands only 27″ high, and is 16″ in diameter. The 1/3-horsepower motor is of standard make, horizontal type, slow speed (1,750 r.p.m.). The pump is a standard jet-type unit. The water system, which will pump 250 gallons per hour from depths to 22 feet, is delivered assembled and ready to plug into a wall socket, according to the manufacturer.

The compactness, silence of operation, convenience, and economy of the water system might well make it suitable for drive-in theatre use.

Drive-In Pagoda

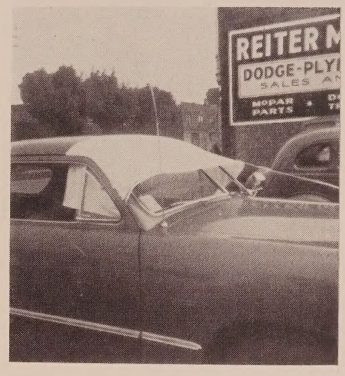
A new accommodation for outdoor theatre walk-in patrons has been announced by the Ballantyne Company. Called a Pagoda, it is completely prefabricated of white cedar saplings with a sloping roof to shed water, and contains a standard height seat and a sturdy table to encourage concession business.

Pagodas are reported to be available in either two-passenger or four-passenger sizes, and can be purchased either singly, or in series for use across the back or along the sides of the drive-in. One car-side speaker is sufficient to handle two, three, or more pagodas.

Drive-In Rain Visor

A flexible plastic visor, said to shield automobile windshields from rain, hail, and sleet, has recently been placed on the market by A. N. McCreight, Inc. According to the manufacturer, the unit may be quickly and easily attached under car doors by a type of metal framework which raises the shade into position so that patrons may watch the show undisturbed by the rain.

Available in various colors and in transparent material, the visor has a gutter on the front which permits the rain to fall off the sides. It is claimed that the product may be stretched across the roof of the car tightly enough so that rain is prevented from running off the roof of the car onto the windshield. The unit is anchored by a fastener running to the hood ornament.



Slip-On Auto Screen

A new type of protection against drive-in insects, a flexible screen which slips over the doors of patrons' cars, has recently been offered for consideration by RASCO.

Said to be available in a variety of screening materials, such as black net-

ting, rayon, nylon, marquisette, plastic, and bronze, the covering embodies elastic bands to hold it tight over doors. Its retractility makes it possible to stuff it in the glove compartment when not in use, according to the manufacturer.

The screen is available to drive-ins under a completely exclusive franchise.

FOR FRONT AND LOBBY •

Balloon-Kite Advertising Unit

A unique advertising device, a balloon combined with a kite, should serve as an excellent means of drawing the attention of prospective patrons to theatres, particularly drive-ins. Manufactured by the Dewey and Almy Chemical Company of Boston, the helium-inflated unit is said to rise, head into the wind, and fly on an

even keel almost directly over its anchor point at any altitude up to 2,000 feet.

The device comes packed in an advertising kit complete with everything needed for operation except a cylinder of helium, which should be obtainable inexpensively in any medium-sized town. The kit includes two white nylon panels on which advertising matter can be printed, and which attach to the sides of the balloon, plus an eight-foot hanging nylon banner, also designed to carry advertising. Decorative effect may be heightened by attaching a small string of pennants to the anchor line.

Flexible Sheet Mirrors

A new line of flexible sheet mirrors, said to be designed for decorative use on flat, convex, or concave surfaces, is manufactured by National Products, Inc. According to the manufacturer, a wide range of colors and patterns gives virtually unlimited scope in the creation of decorative effects heretofore considered almost impossible.

The mirrors are made of real glass and pure lead backing, and special treatment assures longest mirror brilliance. After cloth is applied to the back of the uncut mirror, the desired square or rectangular tile shapes are cut, and the edges specially processed to give added lustre. Top-quality waterproof adhesive enables the mirrors to be used even where atmospheric conditions are difficult.

Outdoor Post and Wall Lights

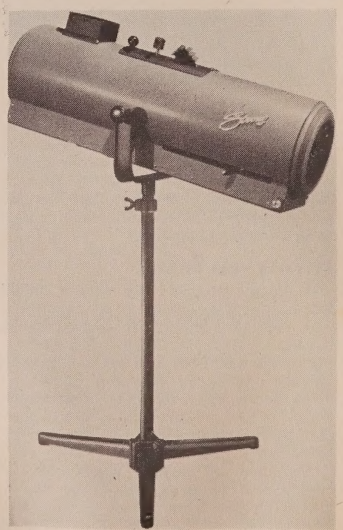
A new line of outdoor fluorescent post and wall lights, said to provide considerably more light at greatly decreased cost, has recently been announced by Great Northern Manufacturing Corporation.

According to the manufacturer, the units are constructed for year-round, all-weather operation and may be seen through fog or haze. Both types of fixtures are said to come ready for easy installation. Although they were first tested and won immediate success in illuminating gasoline service stations, it is reported that they have also been found invaluable in brightening frontal areas of roofed theatres and drive-ins as well as other types of businesses.

FOR INTERIOR AND AUDITORIUM •

Incandescent Spotlight

A new incandescent spotlight, known as the Trouperette, has been developed by the Strong Electric Corporation for use in small theatres, night clubs, schools, television studios, industrial shows, conventions, etc., where physical dimensions and price are factors and where the tremendous volume of light of an arc lamp is not necessary.



A highly efficient optical system is said to enable the unit to project far more light than is possible with any conventional incandescent spotlight. This increased brilliancy is made possible by a variable focal length objective lens system, a 5¼-inch silvered glass reflector, and Fresnel lens used with a standard 115-volt, 1,000-watt prefocused projection type bulb.

The variable focal length objective lens system affords the advantage of retaining the same sharply defined edge, of any size spot, from head to flood, without refocusing.

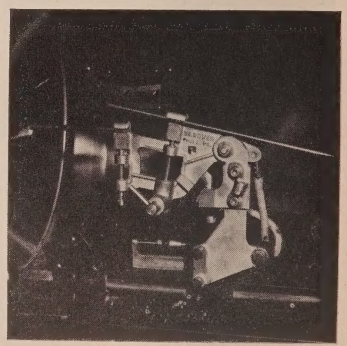
The new spotlight projects a minimum spot diameter of 1/100 of the length of throw and a maximum spot diameter of 1/3 the length of throw. It is provided with horizontal masking control, which can be angled at 45 degrees in each direction, and a fast-operating color boomerang which accommodates six slides. Horizontal sweep of the spot is possible throughout 360 degrees, and all operations of the lamp are extremely simple, according to the manufacturer.

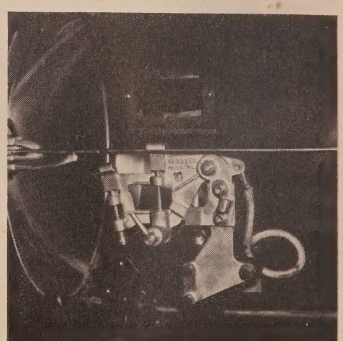
FOR PROJECTION •

Continuous Carbon Burner

A new continuous carbon burner, developed by Hanover, Inc., is an automatic device designed to do more than just conserve carbon.

First of all, it is claimed to cut carbon costs in regular operation by approximately 25 per cent. Secondly, it enables the operator to burn any discarded carbon waste that may have accumulated. Thus, the burner promises to





pay for itself by burning down each positive carbon to less than one inch of waste.

The special automatic arrangement changes to a new pre-heated carbon, once the stump has burned to an adjusted maximum, and continues to burn without any disruption or loss of light. Any uncertainty as to the duration of the burning period for any size of carbon stump is thereby eliminated.

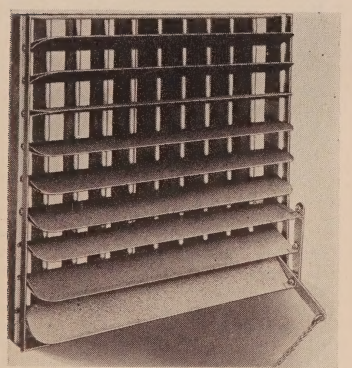
Essentially, the function of the device is to replace the current positive carbon jaw with a new and more accurate type. Its precise construction and the special rest designed for it enable the removal of the present positive carbon-rest in a lamphouse. The elimination of this fixed obstruction in front of the reflector permits a full distribution of light directly into the aperture plate.

The automatic operation of the unit is claimed to be extremely simple with no parts to wear out or burn out. Any projectionist can install it easily in a matter of minutes.

FOR VENTILATING AND COOLING •

Evaporative Cooling Diffuser

Said to be designed for use with evaporative coolers to provide a positive means of compensating for cool and moderate "in between" dry conditions and to prevent discomfort usually caused by on or off blower operation, a new evaporative cooling diffuser has recently been placed on the market by the United States Air Conditioning Corporation.



The unit is reported to be a deflecto-grille with vertical and horizontal blades individually adjustable that raise the air discharge stream above the room occupants and reduce their body heat loss to the air. This feature eliminates the chilly feeling associated with the high air circulation of evaporative coolers on mild days that are neither warm nor chilly. Since shutting off a cooler entirely permits internal heat to build up, the diffuser allows the blowers to run without causing discomfort.

Window Fan

A new window fan, which might find use in theatre ticket booths, offices, and washrooms, etc., was recently placed on the market by Fresh'nd Aire Company.

The unit combines a standard fan with a special universal window bracket which can be adjusted to fit any standard window. The fan is attached to the bracket by a retention spring, and can be directed to blow air out or in as desired.

The fan can also be removed entirely from the bracket and used for spot cooling purposes anywhere. It is of lightweight plastic construction and is equipped with a carrying handle.

FOR MAINTENANCE •

Low-Cost Carpet Cleaner

A new type of carpet cleaner, trademarked "Glamorene," has been tested in theatres with outstanding results. Manufactured by Jerclaydon, Inc., the product is not a liquid, foam, a jelly or powder, but a semi-moist compound that is reddish in color and has the consistency of snow.

According to the manufacturer, the chemically treated product attacks and emulsifies all of the carpet soils and carries them out of and off the carpet. It is claimed that even insolubles, such as sand and grit, are loosened and freed from the carpet pile to make them easily removable by vacuum.

The method of using "Glamorene" is so simple that any maintenance man can be shown how to apply it in few minutes with no special equipment required. The cleaner is sprinkled on the carpet, brushed in easily with either a long-handled deck scrub brush or a regular electrical rotary scrubbing or waxing

machine, permitted to dry for a reasonable period of time, and then vacuumed off.

It is claimed that the new cleaner is also an excellent chewing gum remover and acts without tearing or harming the carpet in any way whatsoever. The chemicals in a small handful of "Glamorene" are squeezed out upon the gum until it is saturated. The compound is then placed over the saturated gum as a small pad or poultice. In a few minutes the gum may be lifted right off the carpet without a trace left.

Spot Removal Kit

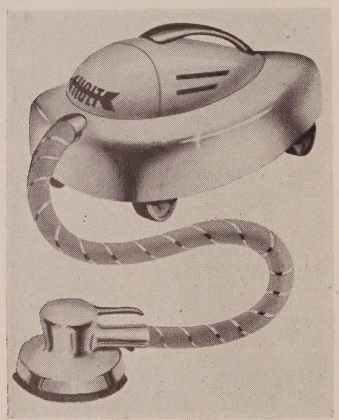
A handy spot removal kit, recently introduced by Multi-Clean Products, Inc., is said to enable the carpet cleaner to "cure" spot trouble in rugs, carpets, and upholstery with the ease and skill of an expert.

According to the manufacturer, the kit comprises a lightweight, sturdy aluminum carrying case designed for maximum portability and ease of handling. A slideout drawer at the top contains a nylon spotting brush and bone spatula for applying chemicals and serves as a handy place to carry cloths and other tools.

The main compartment of the case is equipped with dividers and accommodates a dozen or more chemical containers. Many of the containers are equipped with shaker tops for ease in applying the chemicals. A spotting manual, complete with charts and detailed instructions, is included with a variety of chemicals for every cleaning need.

Upholstery Shampoo Scrubber

A new upholstery shampoo scrubber, by Holt Manufacturing Company, is said to be a boon for upholstery cleaners. The cleaning solution is fed through the brush, and flow is accurately controlled by the operator. The safety switch and control lever are located in the brush head. An automatic heavy-duty, bronze suction pump feeds the brush.



The brush is on an eight-foot flexible shaft and is detachable for easy carrying. The whole machine, light but sturdy, weighs only thirty-five pounds, according to the manufacturer.

Dust-Control Formula

A new time-saving, dust-control method of floor care through use of a special liquid formula has been announced by the West Disinfecting Company, after more than a year of actual field testing on a large commercial scale in industrial plants and all types of buildings and institutions.

The West company claims management has found the use of the compound has resulted in: reduction of costly dust damage to precision machinery and instruments, and to materials and products during manufacturing operations and storage; less absenteeism, because it provides a cleaner, healthier atmosphere; the economical restoration of floors to their original beauty; a substantial reduction in maintenance costs.

The product keeps the air free from dust because it is scientifically formulated for the multi-purpose preservation of floor surfaces, enhancement of floor beauty, and the elimination of dust, thus helping prevent the spread of the harmful bacteria and viruses. It is reported not only to remove dust from floors, but to leave an antiseptic film which inhibits the growth and multiplication of the bacteria present. A surface-sealing film holds down subsequent dust.

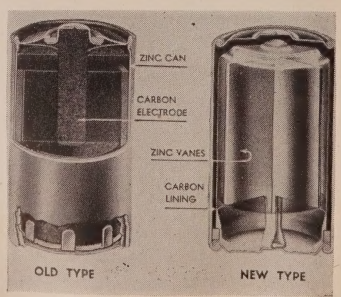
This sealing action is of particular value in connection with new concrete and wood areas, which, unless properly treated, give off dust long after they are laid. It has been noted that when these untreated areas are of considerable size, they exude so much dust that they have clogged air-conditioning ducts and put the systems out of commission.

The new formula is economical and easy to apply with one gallon covering 4,000 square feet of floor surface. It is said to be stainless and clean to use with a rag, mop or by spraying and that floor maintenance cost reductions up to 50 per cent have been realized.

The hand at right was rubbed over an ordinary untreated floor, while the other was rubbed across a section treated with the new liquid.

Flashlight Battery

A new industrial flashlight battery, recently announced by the National Carbon Division of the Union Carbide and Carbon Corporation, features an entirely new type of construction. The container, formerly made of zinc, is now made of carbon with a zinc power vane as the center element. The old-type construction consisted of a zinc can container and a carbon rod center electrode.



Unlike the zinc container of the old cell, the carbon is said to be inert to electrolytic action and hence will never perforate, irrespective of battery age or degree of discharge. It is also claimed the new battery will not swell, stick, or jam in the flashlight.

The new battery should be of particular interest to theatres in that its service life is considerably longer. Emphasis is placed on the fact that the new battery is completely interchangeable with all standard size flashlight batteries so that no change need be made in lamps or cases.

Anti-Slip Floor Finish

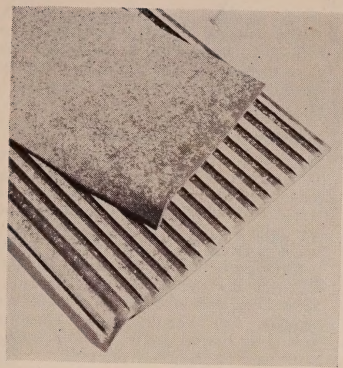
A new self-polishing floor finish, certified anti-slip by Underwriters' Laboratories, Inc., has recently been announced by the R. M. Hollingshead Corporation. The product, said to be applied and cared for like wax, although it has no wax in it, is reported to polish and dry itself to a hard lustrous finish which can be damp-mopped or buffed and does not become sticky, even in hot, humid weather.

A completely non-inflammable water emulsion product, the new finish is claimed to be resistant to heat or cold and not subject to contamination. The finish is suitable for use on all types of floors and may be applied like wax with a mop; a drying period of only 20 to 30 minutes is required. The resultant lustre may be maintained for long periods by sweeping or buffing as necessary, while worn portions may be recoated from time to time without coating the whole floor.

Heavy-Duty Stair Treads

Two new types of heavy-duty stair treads, recently developed by American Mat Corporation, are said to assure long wear under heaviest traffic.

Produced from especially tough cord and rubber compounds, these treads reportedly cushion every step and, at the same time, provide an excellent non-slip surface. It is claimed that these new treads are furthermore unusual in that they are available not only in black, but also in red, green, blue, and mosaic at no extra cost.

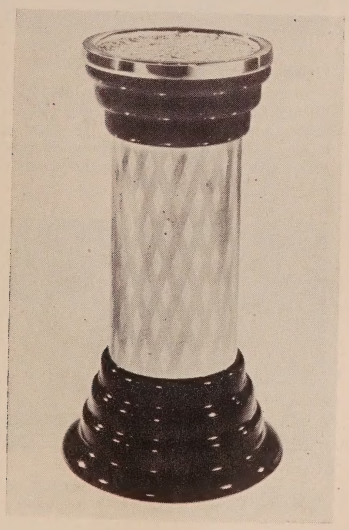


The one type is of heavy molded rib construction, and the second type is of smooth surface. Molding on both types is provided by a two-inch lip which can be increased if desired.

According to the manufacturer, both types are easily installed by means of adhesive or tacking and may be curved over large nosings, common with marble stairs, and can be abutted to each other to cover any given area.

Sand Urn

Said to incorporate many new changes in style, design, and color, a new sand urn has recently been placed on the market by GoldE Manufacturing Company. Distinctively styled and sturdily made of heavy-gauge metal, the urn features the following improvements: a new step construction, eliminating handles, and a new diamond pattern on chrome column.

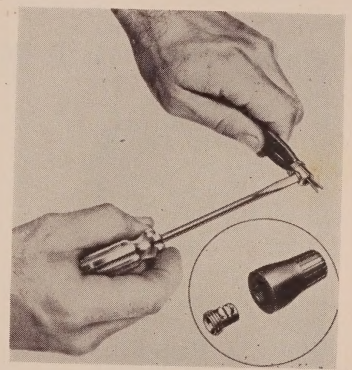


A popular feature of the urn is the wide-base construction, said to reduce the danger of tipping or spilling of sand. The urn is supplied in two standard colors with a chrome center column in Mandarin Red or Ebony Black.

Set-Screw Wire Connector

A new set-screw type wire connector, said to have an extremely high safety factor, has been added to the line of wire connectors manufactured by Ideal Industries, Inc. The new connector is listed by Underwriters' Laboratories for 600-volt application and as a pressure cable connector for general use in all branch circuit wiring. It is recommended for use on conduit, armored cable, non-metallic cable and open wiring.

The connector has a high dielectric phenolic shell with an extra-long, extra-strong skirt. This skirt fully covers the wire insulation and insures a safe, completely protected splice that eliminates possibility of flash-overs. The sleeve and set-screw are solid brass and corrosion-

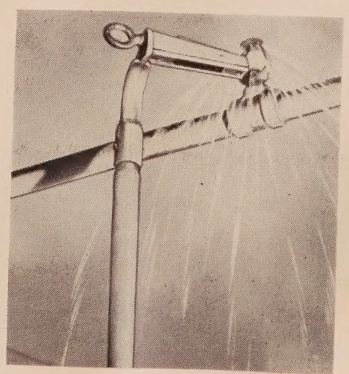


proof. No solder, tape or special tools are needed to apply the connector, and joints can be visually inspected after they have been made. The shell can also be removed at any time for periodic inspection of splices. The entire connector can be easily unscrewed and reused.

FOR MANAGEMENT •

Sprinkler Stopper

A new device to stop property damage by water from sprinklers, after a fire has been extinguished or in case of mechanical failure, has recently been put on the market by the Sprinkler Stopper Company. This sprinkler stopper is a simple unit which fits on the end of a



short pole and is easily inserted in the "ring" of the sprinkler to shut off the water at the point of flow immediately. Rugged and uncomplicated, the device is essentially a wedge with a three-layer rubber diaphragm of scientific construction which covers the outlet, pressure being maintained by a fool-proof mechanical spring ingeniously incorporated in the assembly. The sprinkler stopper is reportedly put in place by firemen who respond to an alarm or by other personnel.

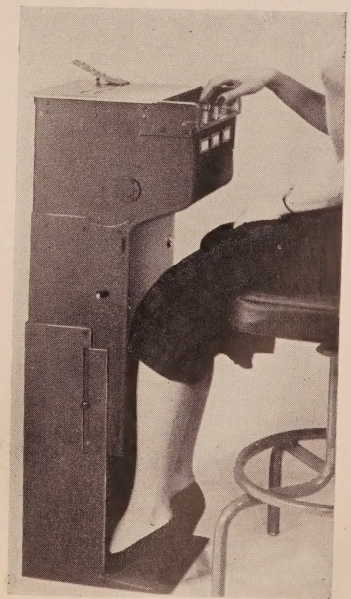
The fact that the device is attached to a pole is alleged to make it easy to remove. The water may be made to flow again in seconds. The dangling pole also serves notice that the sprinkler is temporarily out of operation, according to the company.

Admissions Control System

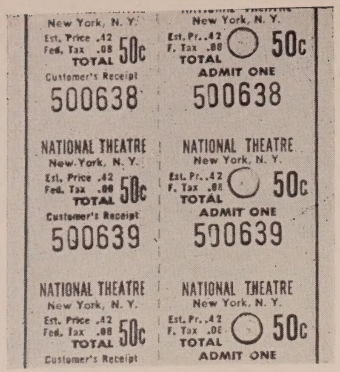
Designed and built by General Register Corporation, the new Automaticket 2-X-1 Admissions Control System is said to prevent ticket palming entirely, speed the collection of tickets at the door, provide space for the printing of advertising messages, enable a sure check on admission receipts, accelerate the issuance of tickets, etc.

First of all, the new type of ticket used under the system is unique in shape and method of perforation with a pre-cut separation line down the center and a hole in the middle of each ticket, so that the doorman can tell at a glance the number of admissions. The fact that a strip of the new tickets is never over 5" long makes them a great deal easier to handle than a long string of conventional tickets.

It is also claimed that one quick and easy motion is all that is required to



divide the tickets down the center separation line with no opportunity for palm-



ing afforded because every ticket must be cleanly torn. There is likewise no need for folding or handing the patron a sloppy stub.

Furthermore, since the customer gets a stub that is uniform, complete, and unmutilated, it can be readily used for the imprinting of any type of advertising message on the back. There is sufficient space on the front to call attention to the message on the rear. Tickets of special sizes are available for loge or other distinctive types of seats.

Secondly, the new 2-X-1 Automaticket Stub Rod Control Box is designed to simplify, expedite, and prevent costly errors and irregularities under the system. Since the tickets have only one hole in the center, it is believed that there can never be duplicate halves on the stub rod spindle. Furthermore, all serial numbers are exposed on the string, none of them is face down or folded in, and any hand-torn ticket may be instantly spotted. Lastly, the stub rod spindle will hold more tickets because the new ticket lies flat, and the tickets go on in multiple units up to five with a single ticket thickness for all.

The machine is compact enough to fit into even the smallest boxoffice and features a cut-away shape that enables the cashier to sit right into it with perfect comfort. It is claimed that unit construction provides the right size machine to fit every theatre's needs with registers available in one to five different kinds of tickets and with tamper-proof, non-reversible counters on each unit. All units operate independently, can be locked against operation if desired, are easily removable, and may be readily installed.

The positive top plate fit of the new machine guarantees a perfect flush fit with no cracks or offsets to catch coins passed out to customers, while a heavier, sturdier, and more stable magazine features a handy clear-sight scale. An improved locking system provides a wide variety of controls, and counters cannot be reversed or tickets issued without advancing the counters.

The register cannot be threaded incorrectly, and a special device stops the machine automatically before the last few tickets pass through. Issued tickets cannot blow away because they are held at a convenient 30° angle and never extend beyond the counters. The register is available with an automatic car counter and accompanying accessories for drive-in theatres to provide a sure system of cash control for them as well.

The new system is distributed and serviced by National Theatre Supply.

Silent Paging System

A new system, designed to page movie patrons without disturbing the entire audience, has recently been developed by The Richmond Products Company. It is said to provide silent, efficient service without the necessity of using a public address system or other distracting methods.

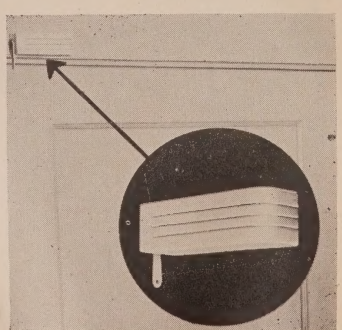
The system consists of a small box-like affair to which a message is placed by means of black letters. Concentrated light allows the message to be read at a distance of 30 to 40 feet without distracting patrons outside of the immediate area.

Equipment includes a box with front and back reading surfaces of translucent Plexiglas and 147 one-inch black activated plastic letters. The system operates with dry-cell batteries with the resultant light providing excellent black-on-white contrast.

Two-inch letters and numerals, available at slightly additional cost, are said to be effective for drive-in theatres in directing cars to the proper ramps.

Burglar Alarm

A new burglar and intruder alarm, recently placed on the market by Electromagic Company, is powered by a self-contained electric unit which requires no wiring.



It is claimed that the alarm may be easily attached to any door or window with only two screws. A continuous ear-piercing alarm is sounded at the slightest opening of door or window, according to the manufacturer.

Counterfeit Bill Detector

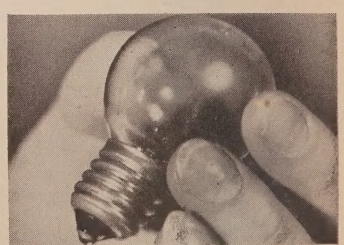
A new counterfeit bill detector, said to be designed in exact accordance with the coded numbering and checking method employed by the U. S. Bureau of Engraving and Printing, is now available to theatres from the Stanat Sales.

Making use of a telephone-like numeral dial, the device verifies the engraving, portrait, or ink of a bill in a matter of seconds. The counterfeiting detecting code is so simple that a boxoffice cashier may learn it in a few minutes.

The unit, which is made in life-long black plastic and measures four and a half inches in diameter, is easy to keep out of sight but instantly handy. According to the manufacturer, many users, however, report that they prefer to keep the device in sight, since its very presence frightens off counterfeit bill passers.

Ozone Lamp Bulb

A small lamp bulb, recently introduced by the Lamp Department of the General Electric Company, is said to give off barely noticeable concentrations of ozone which are useful in making the presence of odors less perceptible.



Reported to operate on ordinary current, the lamp is used with a ballast in a simple fixture to allow the free escape of ozone while shielding the eyes from the ultraviolet energy generated by the lamp. Ozone produced by one lamp bulb is sufficient to mask odors in areas up to 1,000 cubic feet, thus making it a good possibility for washrooms and other parts of the theatre.

Theatre Supply Dealers of the United States

Comprehensive Listing of Names, Addresses, Personnel, Products, and the Areas Served

BRADY MOVIE SERVICE, 1034½ S. 20th St., Birmingham. Telephone: 54-1362. PERSONNEL — Larry G. Brady, L. D. Slaton, Robert Nunnally.

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ARIZONA

GIRARD THEATRE SUPPLY CO., 320 W. Washington St., Phoenix. *(See display listing on this page.)*

ARIZONA FILM SUPPLY CO., 33 W. Congress St., P. O. Box 5447, Tucson. Telephone: 26272. PERSONNEL—Geo. K. Diamos, Geo. N. Diamos, Spirro Diamos, Nick Diamos. AREA SERVED—Arizona.

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THEATRE SUPPLY CO., 1021 Grand Ave., Fort Smith. Telephones: 7402—(Emergency Night) 4910. PERSONNEL—*Manager:* Chester L. Clayton. AREA SERVED—Arkansas, Northern Mississippi, Western Tennessee.

PERRIN THEATRE SUPPLY CO., 1008 Main St., Little Rock. Telephones: 22632—(Emergency Night) 36648. PERSONNEL—*Owner:* "Steu" Perrin. AREA SERVED—Arkansas, Tennessee, Mississippi, Missouri.

CALIFORNIA

MIDSTATE THEATRE SUPPLY, 1906 Thomas, Fresno 3. Telephone: 3-2455. PERSONNEL — *Owner and Manager:* Paul Wallace. *Field Service:* W. W. Williams. AREA SERVED—Central California and Nevada.

PEMBREX THEATRE SUPPLY CORP., 1969 S. Vermont Ave., Los Angeles 7. Used Equipment Division, 1975 S. Vermont Ave. Telephones: REpublic 0711, 1-3151—(Emergency Night) DUnkirk 8-6764, 3-4491. PERSONNEL—*President and General Manager:* Louis M. Wutke. *Assistant Manager:* J. E. Maguire. AREA SERVED—Southern California and Arizona.

JOHN P. FILBERT CO., INC., 2007 S. Vermont Ave., Los Angeles 7. *(See display listing on this page.)*

MOTION PICTURE ACCESSORIES CO., 1678 W. 17th Place, Los Angeles 6. Telephone: PArkway 2894. PERSONNEL—*Owners:* James B. Dabney and James B. Dabney, Jr. AREA SERVED—Western and Coast states.

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NATIONAL THEATRE SUPPLY, 1961 S. Vermont Ave., Los Angeles 7. PERSONNEL —*Manager:* Lloyd C. Ownbey. *Assistant Manager:* Bundy Smith. *Salesmen:* Jack Hessick, H. L. Plunkett. AREA SERVED—Southern California, Arizona, Nevada.

B. F. SHEARER COMPANY, 1964 S. Vermont Ave., Los Angeles 7. Telephones: REpublic 3-1145—(Night) BRighton 04901, PLeasant 15261. PERSONNEL—*Manager:* Barclay W. Ardell. *Salesmen:* Ed Budd, L. F. Abbott, Don Grieve. *Engineer:* Henry Grussing. *Counter Man:* Stanley H. Lay. AREA SERVED—Southern California, Arizona, New Mexico, Southern Nevada.

*RIDDELS THEATRE SUPPLY, 1543 Fifth Ave., San Diego.

NATIONAL THEATRE SUPPLY, 255 Golden Gate Ave., San Francisco 2. Telephone: MArket 1-4171. PERSONNEL — *Manager:* Heaton Randall. AREA SERVED—Northern California, Nevada, Southern Oregon.

WALTER G. PREDDEY, 187 Golden Gate Ave., San Francisco 2. Telephones: UNderhill 1-7571-2—(Emergency Night) BAyview 1-5749. PERSONNEL—*Owner:* Walter G. Preddey. *General Manager:* Robert O. Bemis. *Salesmen:* H. C. Graywood, Gordon Allen, R. L. Mann. AREA SERVED—California, Nevada, Oregon, Arizona, Hawaii, Alaska.

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WESTERN THEATRICAL EQUIPMENT CO., 337 Golden Gate Ave., San Francisco 2. Telephone: Hemlock 1-8302. PERSONNEL—*President and General Manager:* C. W. Morris. AREA SERVED—California, Nevada.

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NATIONAL THEATRE SUPPLY, 2111 Champa St., Denver 2. Telephones: TAbor 0201—(Emergency Night) Race 0392. PERSONNEL—*Co-Managers:* Jasper J. Morgan and Joe B. Stone. *Salesman:* J. Richard Lutz. AREA SERVED—Colorado, New Mexico, Wyoming, Western Nebraska, Eastern Montana, and Black Hills of South Dakota.

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WESTERN SERVICE & SUPPLY, INC., 2120 Broadway, Denver 2. *(See display listing on this page.)*

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JOE HORNSTEIN, INC., 714 N.E. First Ave., Miami 36. *(See display listing on this page.)*

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NATIONAL THEATRE SUPPLY, 187 Walton St., N.W., Atlanta 3. Telephone: Lamar 8486. PERSONNEL—*Manager:* J. C. Brown. *Assistant Branch Manager:* R. M. Goldsmith *Salesmen:* J. G. Thigpen, J. O. Jetton, R. L. McWilliams, Jr. AREA SERVED—Georgia, Florida, Alabama, Tennessee.

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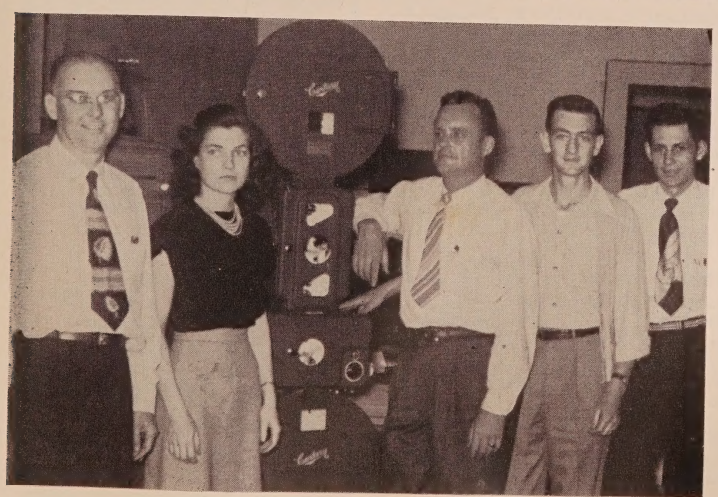

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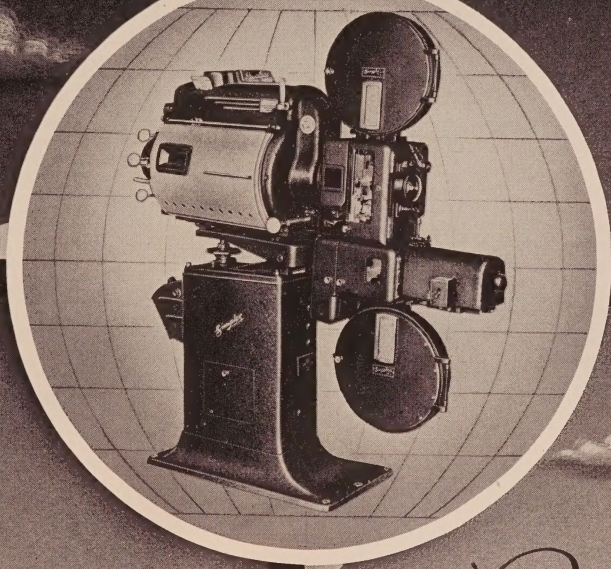

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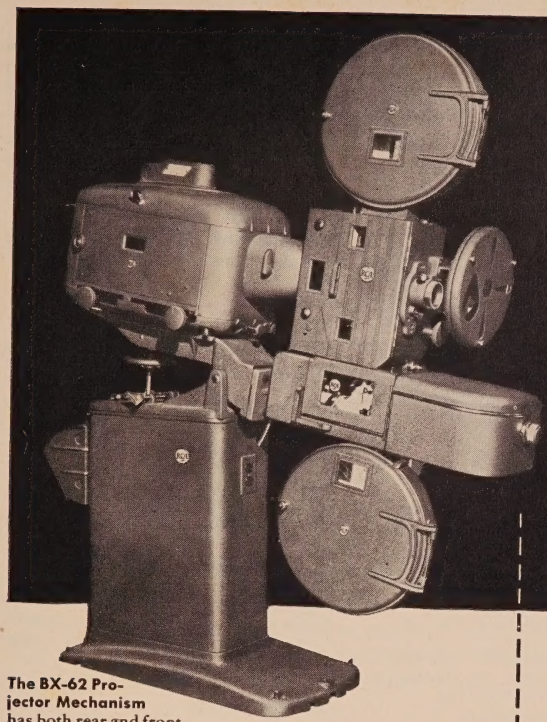

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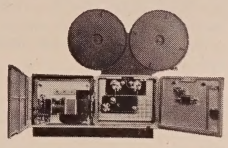

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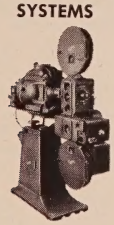

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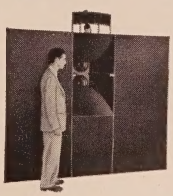

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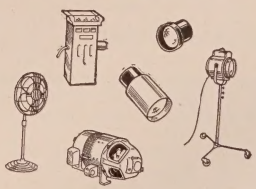

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Review of Paints, Varnishes, and Lacquers

Resume of Properties and Uses of Coatings; Special Materials and Future Possibilities

A decade ago the paint, varnish, and lacquer industry was in the process of transition. Although it had been on the threshold of becoming an industrial science for several decades, it took the impetus of war to give its chemists, chemical engineers, and other technically trained men, their first real opportunity to emphasize the fact that the protective organic coating industry is really a technologically young, vibrant, and progressive chemical engineering industry.

The industry is thinking in terms of changing from batch processing to continuous methods of production, although it may be difficult to produce coatings continuously because many hundreds of different raw materials, for example, in varnish processing—have chemical properties within only relatively limited ranges. Continuous processing, however, will be applicable to the dispersion of pigments into vehicles for paints, enamels, and other pigmented coatings.

The adoption of many new analytical test methods has presented the industry with new subjects and ideas which are broadening the horizon and supplying new instrumentations and techniques which are establishing the art still more firmly as a chemical engineering industry.

BRIEF: ***Paint . . . and its allied products . . . are valuable helpmeets to the theatre owner who wants to keep his physical property looking attractive . . . in addition to giving it protective armor against the ravages of weather.***

The selection . . . and application . . . of paints, lacquers, and varnishes . . . can be no hit-or-miss proposition, however . . . Their properties and uses must be fully understood . . . before they are applied.

The following article surveys in detail the important aspects of these three priceless theatre aids . . . in an effort to acquaint the showman with the ways in which they may best serve him.

PAINT

Paint manufacturing is a progressive industry, dependent upon the knowledge and skill at the command of the manufacturer. In 1907 manufacturing practice was based largely on tradition, and since then the subject has received intensive study from trained specialists and the use of a multitude of devices for the measurement and evaluation of raw materials and finished products has been almost universal.

With scientists constantly seeking to improve the old and discover the new continual progress is inevitable. Even that ancient backbone of the industry, linseed oil, is assuming more and more the role of a raw material in the production of oils with special properties for definite purposes.

At the present day, all paint products have been improved, but there is still a selfish minority which promises everything and furnishes less than nothing, in that their products, failing quickly, require the extra expense of removal. Accordingly, the old dictum that "a responsible name on a sealed can is everywhere a guarantee of quality" still holds good.

Definition

In its simplest terms, paint is a mixture of various solid substances and liquids, in a consistency suitable for application to surfaces to form an adherent coating to protect or decorate.

In general use, paints can be divided into two general groups. The first, house paints, are those designed to protect and beautify the surfaces of materials used in the construction of buildings. The second, industrial paints, are those designed for use in the myriad products of industry, where special paints are designed for a specific purpose in accordance with the demands.

The Test of Painting

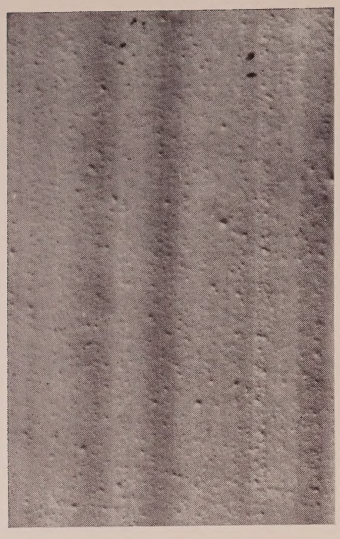
Service is the true test of paint value. The physical, chemical, and technical conditions governing the behavior of paint in any given case are so numerous and so obscure that it is hopeless for anyone but an expert to comprehend them.

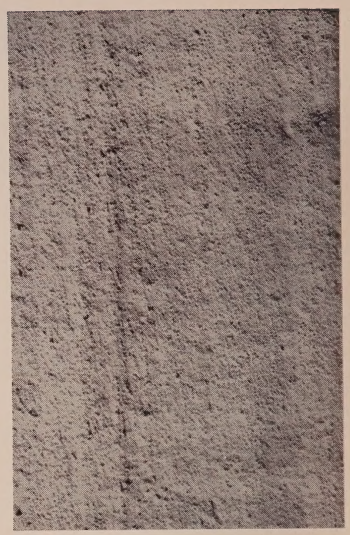
Obviously, normal wear is the most desirable mode of disappearance of paint. It is one of the chief objects of the paint manufacturer and the paint technologist that their products meet this requirement.

The normal wear by paint may be accomplished, first, by careful selection of raw materials and unremitting laboratory control to insure uniformity in physical and chemical qualities: second, by constant chemical research for means of improvement; and, lastly, by experience with large scale exposure tests of products under intensified natural conditions, such as exposure in hot, humid, or dry climates, and the accelerated weathering machine.

House paint is designed to cover a wide range of conditions and the better grades of prepared paints to meet the average conditions with remarkable success. As between the many competing products, naturally it is to the record of success rather than to the composition of the paints that the consumer must look for enlightenment. It may be taken as axiomatic that no paint obtains permanent popularity except on the basis of substantial merit. Nothing could

THE RIGHT MATERIAL IN THE RIGHT PLACE. The board at the left was coated with an interior finish, while the board at the right was coated with house paint. After two years' exposure in Florida, the interior finish, not intended for outside exposure, suffered serious deterioration, while the house paint, formulated for this particular use, was not noticeably affected by exposure. (S-W photograph.)





THE EFFECT OF TIME ON PAINT. Left picture shows a freshly dried film of SWP gloss white (magnified six times, as also are the others). The nibs shown are a few specks of pigment but mostly extraneous dirt which has fallen into the paint. Center picture is the appearance after a year's exposure in Florida. The surface is chalking freely. Right picture is the appearance after 4½ years' exposure. While still chalking and having lost most of its gloss, it is clean and there are no checks or cracks. Such material is entirely satisfactory for house paint usage. (S-W photographs.)

be more conducive to increased sale of a given paint in any locality than the ocular demonstration of its value. It is this demonstration of convenience, economy and durability that has caused the consumption of prepared paint to expand to its vast proportions at the present day.

Paint Ingredients

The materials used in the manufacture of house paint are pigments or finely divided minerals, drying and semi-drying oils, volatile thinners and solvents, driers, and varnishes.

Drying oils—As used in paint, drying oils help to insure the distribution that will result in a firmly coherent and adherent film of the desired luster. Unusually of vegetable origin, drying oils harden into elastic films through the absorption of oxygen, an action which can be increased by the catalytic action of driers containing salts of such metals as lead, manganese, and cobalt.

In the order of importance, drying oils are linseed oil, tung oil, and fish oil. Fish oil, properly refined, finds special service in coatings for metal surfaces subjected to heat.

Semi-drying oils are also of considerable importance, and include such items as cottonseed, hempseed, corn, dehydrated castor, and soybean oils.

Driers—Driers are added to paint to minimize the exposure time of the wet film and to permit the application of additional coats in the shortest possible time.

Driers are salts of metals—such as lead, manganese, and cobalt—and promote the oxidation or polymerization of the drying and semi-drying oils. They are usually salts of organic acids (rosin, naphthenic acid, and the like).

The inclusion of driers in paint by no means prolongs its life. The final destruction of good paint is primarily due to progressive oxidation and, accordingly, any material, like the driers, which hastens oxidation, shortens the life of the paint job and, therefore, the proportion of drier should be limited to its practical necessity. The percentage of drier must, accordingly, be adjusted carefully to the formula of the particular product.

Volatile Thinners include petroleum thinners (mineral spirits, VM&P naphtha, and the like), turpentine (gum turpentine, wood turpentine, and spirits of turpentine), alcohol (methyl and ethyl), benzol and allied coal-tar distillates, and so forth. The form clear solutions with the oils used in paints, and completely evaporate rapidly on exposure.

Some volatile thinners are more generally used in such items as varnish removers and bronzing liquids than in paints.

Varnishes—As used in paint manufacture, varnishes are solutions of resins or fossil gums in drying oils, with added volatile thinners and dryers, or of the newer synthetic resin varnishes. Such varnishes are used chiefly as the vehicle of enamels, quick-drying floor paints, and synthetic house paints.

Types and Uses of Paint

The best paint is the kind that best and longest protects and beautifies the surfaces to which it is applied.

Some of the types of paints, and their uses, are enumerated in the following paragraphs.

House Paint is paint designed to protect and beautify the surfaces of materials used in construction of buildings, especially of dwellings. Materials used in the manufacture of house paint include pigments, drying and semi-drying oils, volatile thinners and solvents, dryers, and varnishes. A properly prepared paint, applied to outside surfaces, should last from three to five years, depending on the conditions of exposure and climate.

Flat Wall Paint is that type of interior paint designed to produce a lusterless finish, especially on plaster, which is, by being washable, more sanitary than wallpaper and, by being more durable, more economical.

The vehicle is usually tung oil varnish, modified by soybean oil (because of its colorlessness) with a large volume of mineral spirits, or an alkyd.

Mill Whites are paints of the enamel type for use on interior wall surfaces to augment illumination in order to reduce hazards and promote physical comfort and reduce cost of illumination. The vehicle is usually an ester gum-tung oil varnish.

Mill whites are usually offered in three types of finish: glossy, semi-flat, and flat. Some manufacturers furnish a limited range of colors. The paint is applied in two coats in a primer and a finish, the first to level the surface and insure adhesion, and the second to insure reflection and diffusion of light.

Quick-Drying Paints, or enamels, are often called "four-hour enamels" and so forth. The principal vehicle is usually a varnish of the alkyd type.

Quick-drying house paints are those which, hardening in a few hours, permit a second coat to be applied a very short time later. As in the "four-hour enamels," the phenolic type resins generally play an important part as also do specially treated drying oils.

Aluminum Paint has a pigment consisting of finely divided aluminum particles in flake form suspended in a suitable vehicle, usually of the oil-varnish type. Its chief uses are in painting structural steel and interiors of industrial buildings and as priming coats for wood.

Aluminum paints, owing to the shape of the metal particles, have the unique property of leafing: the tiny flat flakes rising to the surface of the liquid and forming there a metallic layer.

Zinc Dust Paint—Zinc dust is metallic zinc in finely powdered form. In the production process, a slight film of zinc oxide forms on each particle.

Being electro-negative to iron, zinc dust is, when mixed with special vehicles, highly efficient as a rust inhibitor; and, as a priming coat on metal under other paints, it is efficient in preventing cracking and scaling due to rapid change of temperature.

Casein Paints are products known as "water paints." The binder in these products is casein (derived from milk) with a non-toxic preservative.

Casein paints are furnished as a dry powder to which water is added by the user or as a paste to which additional water is added. They are all available in tints, as well as white.

While used largely for final coatings on interior walls, casein paints are also used as priming coats, especially on plaster, under oil paints and enamels, and as an opaque coat between the first coat and the third coat of oil paints. In the case of the plastic casein paints, use is primarily that of texture decoration and is, as a result, produced as a plastic product rather than a fluid one.

Some types of casein paints are especially adapted to the illumination of industrial buildings.

Cement Paint—The name, cement paint, was formerly applied only to paints designed to protect and embellish cement, concrete, or plaster surfaces. More recently, however, it has been used to designate paints containing Portland cement.

Cement paint, in this more modern sense, was devised to replace ordinary paints which do not adhere well to surfaces of this type. Modern cement paints can even be safely applied to new, even wet cement and similar surfaces.

Preparation for Repainting

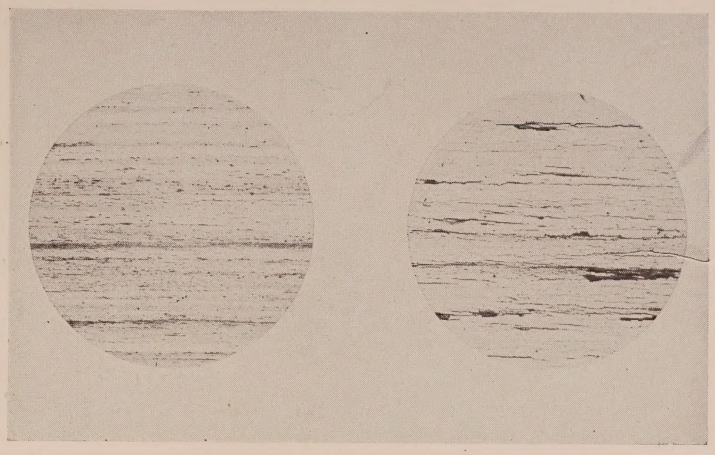
During the war, the paint-neglected surfaces of our country were losing a battle with the sun, rain, and other natural enemies. Many paint jobs that were due had to be postponed, and deterioriation set in to a greater extent than in normal times.

Before any painting is done, all necessary carpentry, masonry, and other work should be repaired. Loose boards should be securely fastened, badly split or rotted lumber replaced, mortar joints pointed, loose chimney brick cemented, corroded gutters and downspouts replaced, shingles installed where needed, roof coatings used where necessary, windows and doors caulked, new window panes substituted for broken ones: all these preliminary jobs should be done.

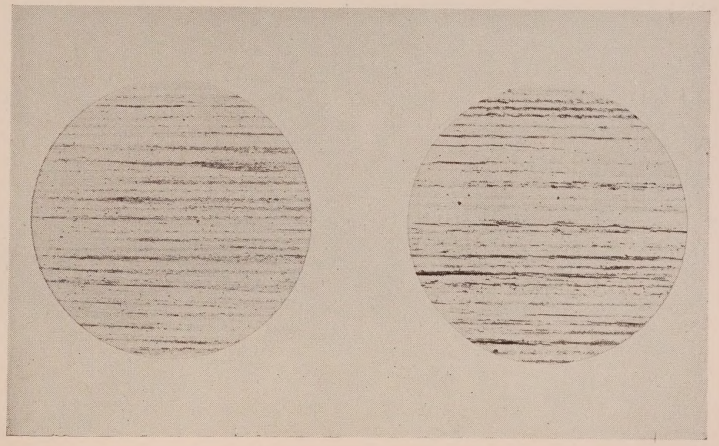
Next, surfaces must be properly prepared. All loose paint and all foreign material must be removed. Loose paint and efflorescence (salt peter) may be removed with a scraper or wire brush. Scrubbing with a cleaning solution may be necessary for the removal of mud and grease. Sometimes small patches of paint will defy the best efforts, yet, for best appearance, they should be removed with solvent paint remover, electric paint remover, or torch.

Wooden surfaces are cleaned (1) by scraping and wire brushing and (2) by burning and scraping.

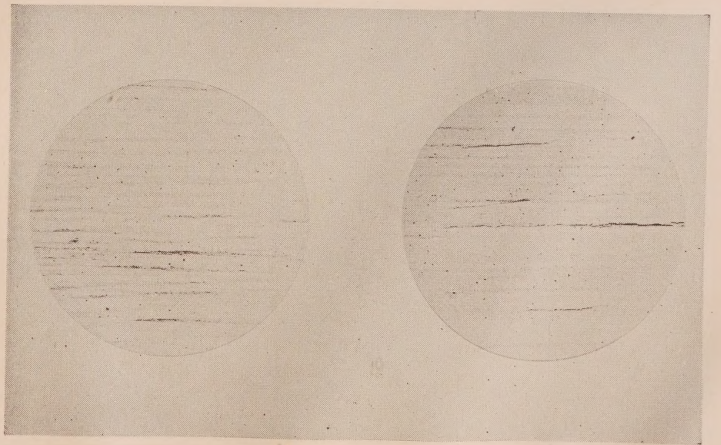
Scraping and wire brushing is used primarily on very large wooden surfaces.

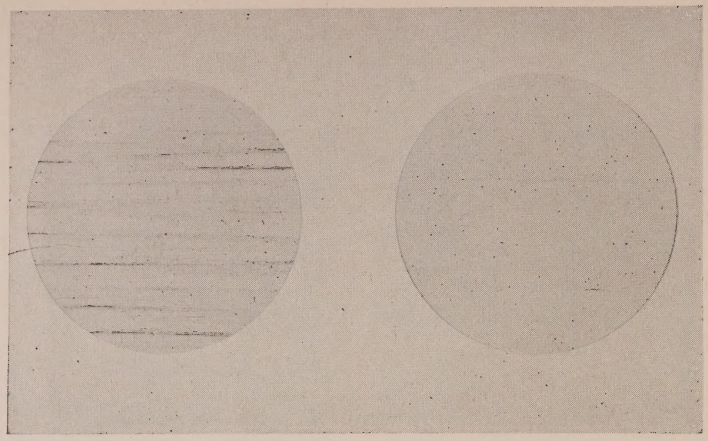


PROGRESS THROUGH THE YEARS is shown in this and the following five pairs of comparative photographs, all of which have been provided by the Sherwin-Williams Company and M. Van Loo, its director of paint research. In each set of pictures, the left represents the effects on cedar and the right on yellow pine. Top picture shows the 1927 formula after four years' exposure in Chicago.

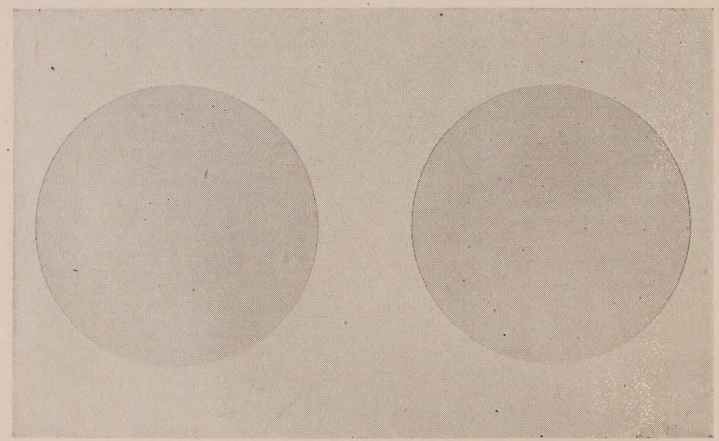


THE 1935 FORMULA shows (middle picture) an advance in quality, as represented on the cedar and yellow pine samples, after four years' exposure in Chicago. In three more years, in 1938 (bottom picture) still more progress is made. Here the tests were photographed after four years' exposure in Chicago. All the pictures in this series were photographed at x3, but reduction here brings it to x2.

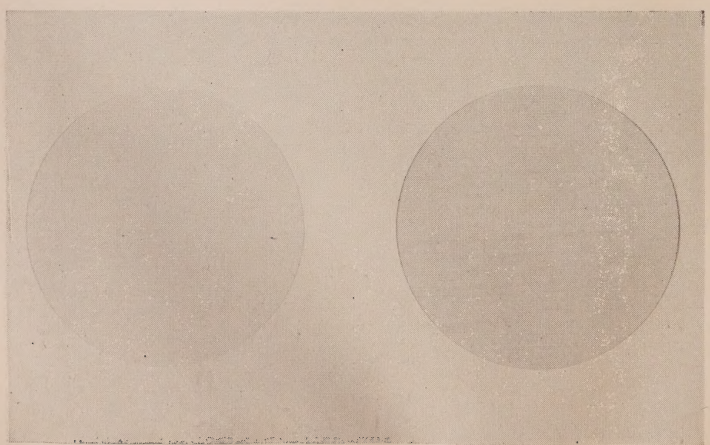




THE 1940 FORMULA shows a great advancement in durability, as shown by the cedar and yellow pine tests (top picture) after four years' exposure in Chicago. It is only through research continuing over the years, with thorough tests on all combinations and permutations of paint ingredients, that fine products can be developed ultimately to achieve the combination of great beauty and long life.



THE 1942 FORMULA is shown in the middle picture, after three years' exposure in Chicago. The 1943 formula, after a like exposure, is shown in the bottom photograph. All pictures in the series show the sample on cedar at the left and on yellow pine at the right, and all are shown here at a magnification of x2. It is to be expected similar investigations will be continued. (All Sherwin-Williams photographs.)



Burning is dangerous and is not to be recommended. Use of sand paper and paint remover is desirable only for small areas, such as furniture or other fine finish work.

In the burning and scraping process, the old paint is softened with an electrically-heated tool or gasoline blow torch. Hold the torch in one hand to blister the surface. While the paint is still soft and hot, remove it immediately with the scraper which you hold in the other hand. Do not burn with a yellow flame. Use a blue flame close to the wood. Move back and forth slowly. For safety's sake, have a fire extinguisher handy.

Where old paint is rather thick, as under eaves and at other places not reached by the sun, rain and dew, future trouble may be avoided by its complete removal, or at least by cutting it down with sandpaper. This treatment also improves the adhesion of the new coat of paint.

Resinous knots should receive special attention. The resin should be scraped off and the traces mopped off with paint thinner. The knots should then be given two coats of shellac.

Many hinges, screws, nuts, bolts, and other metal work will have rusted more or less during the period of neglect. Loose paint, rust, and scale should be removed with a wire brush or scraper. As soon as possible after the removal of the rust, an anti-rust primer should be applied. Holes over the counter-sunk nails should be filled with putty.

When painting, do not neglect shutters and fences. It is the careful attention to accessories that marks the well-painted property.

In damp, shady places, mildew should be destroyed and the surfaces sterilized by scrubbing with a good paint cleaner. It may be desirable to employ a relatively strong solution in order to remove the outer layer of paint in which the mildew is embedded. After the surface has been rinsed and dried, it is ready for the new coats of paint. In order to prevent a future infestation of mildew, a fungicide should be added to the paint.

Excessive relative humidity caused by ground moisture, living conditions, or lack of ventilation should be corrected. Any informed builder or competent insulation authority can make suitable recommendations.

Before repainting interiors, films of grease and vapors should be washed off with paint cleaner. Otherwise poor adhesion of the paint will result. If any of the old paint is loose, it should be scraped off and the bare spots should be leveled with a spackling, or patching, compound. This material may also be used to fill cracks in old paint or plaster. Large areas of loose plaster should be removed and the holes filled with patching plaster. Plaster that has been completely wet should be replaced. New plaster should receive an extra coat of primer before the main job is started.

Cement and plaster surfaces may be prepared for the application of oil paints by preliminary treatment with zinc sulphate in the proportion of 8 ounces to 1 gallon of water. There are, however, available paints requiring no preliminary treatment of the surface.

To fill the pores of unusually absorbent surfaces in preparation for painting,

use a sealer. By preventing the absorption of oil from the paints, these coatings not only reduce the number of coats required but insure a stronger film.

If wear and tear on a floor finish has been general but not very severe, cleaning with a paint thinner and simple refinishing will probably be satisfactory. Where traffic has been heavy in several scattered areas, the finish may have worn away entirely, and the wood itself damaged. As refinishing will result in a non-uniform appearance, the best procedure is to use a sanding machine to remove all of the old finish and scarred wood.

By following the foregoing recommendations, you can win the battle against the enemies of paint. But, be sure to do these things: Before painting, prepare thoroughly, employ a good painter, ask your paint dealer for advice, and use the best paint you can buy.

Repainting Metallic Surfaces

Here, in brief, is the formula for a successful paint job on metals: First get the surface clean before you paint, and then apply the recommended number of coats of paint to exterior bare metal surfaces.

The enemies of paint—rust and scale, oil and grease, moisture and salt deposits—must be completely removed before any new paint is applied. If the area is covered with dirt and grease, the coating does not come in contact with metal and so does not adhere. If the dirt and grease come off, the coating comes off with it. If rust is not removed, the paint is under a handicap from the start. Under severe conditions of exposure to salt water, rain and sun, rust soon breaks through again.

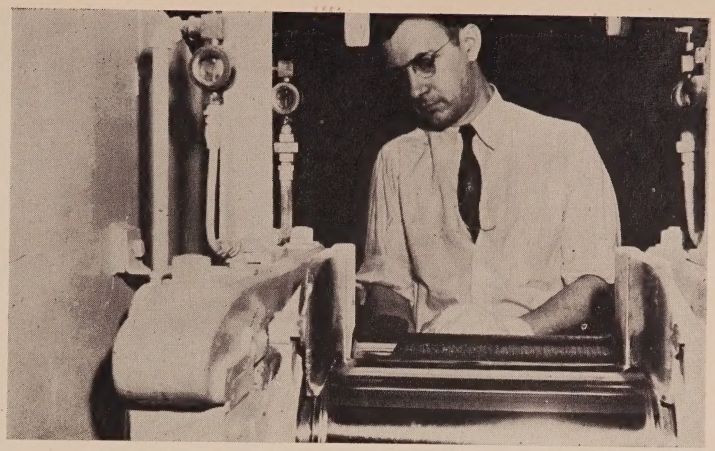
All surfaces have minute indentations or pores, sometimes so small that you can see them only through a microscope. In addition, good painting surfaces have small irregularities like a continuous series of hills and valleys. When the paint is applied, it flows or is forced into these pores and valleys, securing a foothold. If paint is well worked into these holes by brushing or spraying, better adhesion will result. A paint film, if it is applied over loose projections which are not secured to the surface, will give away. That is the reason for the warning: Never paint over a surface which is not clean. Do not paint over shiny smooth surfaces which do not have smalls and valleys so necessary for good adhesion. Roughen them with a wire brush or sandpaper.

Steel surfaces are prepared for painting by these methods: (1) Sandblasting, (2) scaling and power wire brushing, and (3) scraping and hand wire brushing.

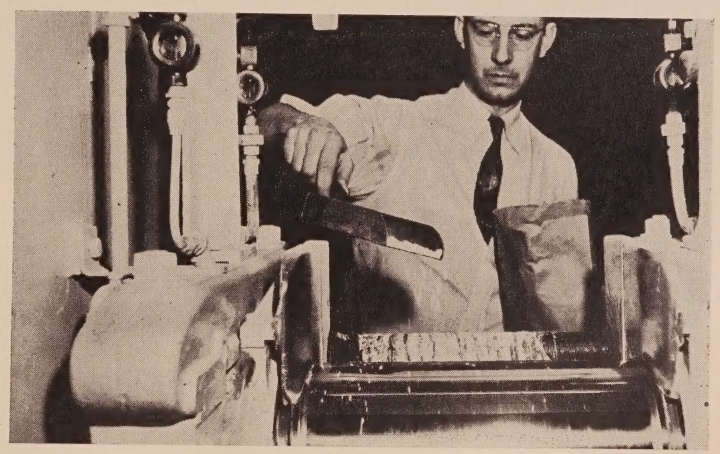
Sandblasting is the only method which thoroughly cleans steel of everything, including mill scale. In the same operation it roughens up the surface to permit good adhesion. There are two methods of sandblasting—dry and wet, each with its special advantages.

Dry blasting is used in confined spaces where the dust can be controlled and where it would be difficult to remove the water if the wet process were used.

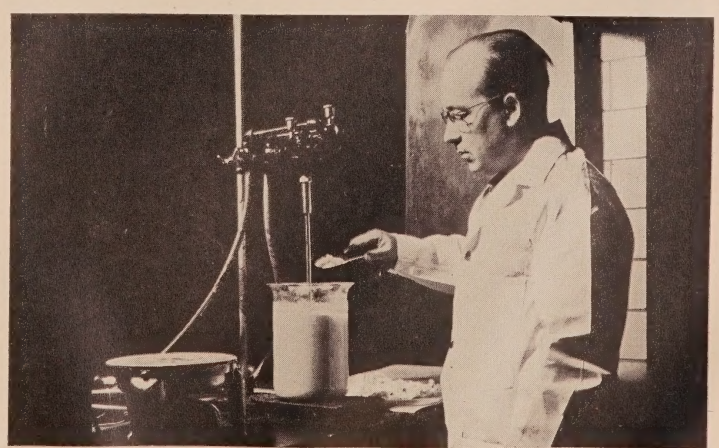
Wet blasting is used in the open and other places where dust must be kept

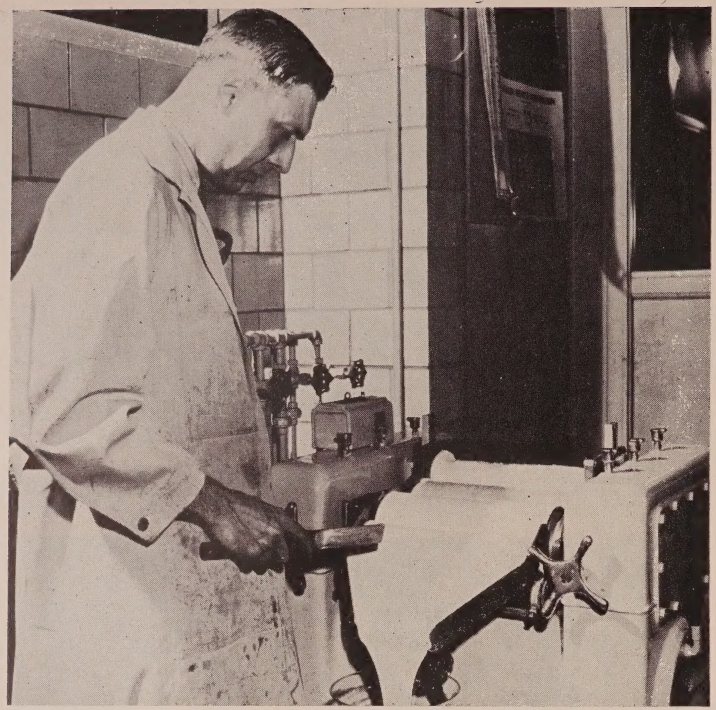


NEW SYNTHETIC RESINS are playing their part in the development of better paints, as well as a role in the conservation of natural oils and resins. Through courtesy of the Goodyear Tire and Rubber Company, there are presented here five pictures on the use of Pliolite S-5 in paint manufacture. Top picture shows preparation by plastic mixing on a hot two-roll mill preparatory to receiving the pigment.



PIGMENT IS INCORPORATED into the Pliolite S-5 resin for a paint base, as shown in the middle picture. This is a rapid and effective method of making paint. In the bottom pictures is shown the Pliolite S-5 resin being dissolved in a solvent to make a paint vehicle which can be used for grinding paint by the conventional methods. The new resin is expected to make useful, fast-drying, protective coatings.





A FLAT WALL PAINT is made by grinding the pigments into a solution of Pliolite S-5 resin (top picture). This is the type of mill commonly used in the paint industry. The final step (bottom picture) in the development of Pliolite S-5 paints is the coating of panels which are subjected to numerous tests, such as those shown in the Sherwin-Williams pictures. (Pliolite pictures by Goodyear Rubber.)

down. Do not blast near exposed machinery, compartments where others are working, or places where it is impossible to control the dust and water.

By scaling and power wire brushing, most of the old paint and heavy scale is removed with a clipping hammer. Then it is cleaned with a rotary wire brush. This type of cleaning is not as thorough as sandblasting, since it removes paint only from the high spots but will not clean out the pits. It also takes more time and men. Take it easy with the chipping hammer. While it chips the paint, it will also chip the steel and raise sharp points from which the paint will pull away and leave thin spots. The thin spots are like the seat of old dungarees: not much protection. While the scraping is going on, cover all electrical equipment in the vicinity. After paint removal job is done, thoroughly clean all electrical equipment.

Scraping and hand wire brushing is similar to scaling and wire brushing method, except that no power tools are employed. A hoe or flat steel piece is used to scrape off as much rust, loose paint, dirt, and the like as possible and a hand wire brush finishes the cleaning. Obviously, the power tool method is superior.

The amount of exposed bare steel, the amount of intact primer coat, and the amount of finish coat firmly adhering will determine which of the methods described is to be used. If the surface is badly corroded and a large percentage of bare metal is exposed, it should be completely cleaned by the most suitable method described. Be sure that all the rust is removed, or it will continue to spread and force the paint off.

If there are large areas of film primer or finish coats and relatively little corrosion, it is usually advisable to touch up these areas instead of completely cleaning and painting. First, scale and wire brush all corroded areas to bare metal. Then wipe off any grease or oil with a rag soaked with gasoline or thinner, since wire brushing will not remove it. Then, with a hand wire brush, roughen the complete surface, removing all minor corrosion, loose paint, dirt, and so forth.

VARNISH

Half a century ago, varnish making was a secret art, the details of which were jealously guarded by its adepts. Formulas and manufacturing procedure, though comparatively simple, were jealously guarded by their possessors and entrance to the stack was as difficult as entrance into a secret society. The practical varnish maker sneered at the chemist, and his sneer was more or less justified by the state of chemical knowledge at that time.

But it was inevitable that, with the advance of organic—and especially colloid and physical—chemistry, an industry of such importance should arouse the interest of scientists. The consequence is that today the experimental laboratory dominates the plant, and formulas are dictated, after long research and testing, by the practical scientist. The old method of trial and error is definitely out of the picture.

The advent of synthetics in great numbers and variety has further strengthened the position of the scientist, and has also brought the stack into closer cooperation with the laboratory.

This rapid inroad of the synthetics on the other hand has stimulated technical research by those interested in the older materials, with the result that the surveyors of these have been compelled to improve and standardize them for use in more forms: and, as a consequence, these old kauris, congos, manillas, and so forth are rapidly resuming their ancient popularity. Furthermore, the technical men have been busy with the oils used by the industry, with the result that these are now available with practically any required property.

And the end is not yet in sight. Competition is enforcing constant progress, and though we cannot predict whither, we can safely say its path is consistently onward and upward.

Definition

Varnish, broadly speaking, is a solution of resins in liquids which, spread on a surface in a thin film, dries by the evaporation of the volatile constituents, by the oxidation or chemical reaction of other constituents, or by a combination of both processes, and leaves a continuous, protective coating.

Vegetable oils (especially the so-called drying oils), fossil gum resins, synthetic resins, natural gum resins, volatile mineral oils, thinners, metallic salts, and, to a minor extent, animal oils are the materials of varnish manufacture.

The purpose of varnish is to enhance the beauty of surfaces, to protect them from injury, to increase the luster or hardness of other coatings, and, in its technical applications, to exclude moisture and gases, vapors, and other agencies of decomposition or decay, to prevent corrosion, and to reduce friction.

The transparent and translucent forms of varnish are clearly differentiated, but some of the opaque forms are distinguished from paint only by their composition, the varnish, with few exceptions, containing resins as essential constituents.

The luster of varnish is largely due to resins. The most lustrous varnishes are sometimes soft and not durable, unless the varnish is subjected to chemical treatment or fluxed at high temperatures with the proper oils. But such treatment involves some diminution of luster. Rosin, however, is a highly important constituent of many synthetic resins.

Elasticity of varnish is chiefly due to the constituent oils and their proper treatment, though certain resins assist this property.

The durability of varnish is due to the selection of ingredients and to the treatments of the materials, especially those involving heat. The qualities of a varnish can be determined by standard physical tests prescribed by various scientific organizations, all of which work in collaboration. The tests of the American Society for Testing Materials are in general use.

Kinds of Varnish

The varieties of varnish are almost as numerous as the branches of art and industry, each varnish-consuming art and industry requiring numerous kinds and qualities of varnish. Each of the larger manufacturers regularly lists from 100 to 200 varieties, while the special varnishes prepared for different manufacturing uses far out-number these.

If the varnish selected for any purpose is found to be unsatisfactory, the only safe course is to select another varnish. All varnishes are intended to be used—and should be used—exactly as supplied by the manufacturer.

OLD AND NEW INGREDIENTS. Here is a comparison of the durability of an old-type varnish made with natural resins and a modern spar varnish made from synthetic resins. After an exposure of nine months to weather in Florida, the old-type finish, at the left, has completely failed, while the new type, at the right, shows virtually no deterioration under the same conditions. (Sherwin-Williams photo.)

Varnishes cannot be safely mixed, reduced, or thinned. Varnish is a product of chemical reaction at high temperatures. Mixtures of two varnishes, or the addition of thinners in the cold, may induce separations and precipitations, and will certainly affect the quality.

Varnishes may be broadly classified as oil varnishes and spirit varnishes.

Oil Varnishes are substantially solutions, effected by heat, of natural or synthetic resins in a fixed oil (commonly a vegetable oil) with a small proportion of metallic salts to facilitate drying, and sufficient volatile liquid to obtain the required fluidity.

Oil varnishes, enamels, painters' japans, and spirit varnishes (shellac and dammar varnishes) are used in the finishing of buildings.

Spirit Varnishes are substantially solutions of resins in volatile liquids. The most important of this group is shellac varnish, which is a solution of shellac in ethyl alcohol. Shellac itself is an exudation deposited by the female *Laccifer lacca* on the smaller branches of the trees of the fig family in India and neighboring countries. Such varnish dries to a hard, semi-lustrous coating.

Another less important item in the spirit-varnish class is dammar varnish, a solution of gum dammar (obtained from the sap of *Shorea wilsneri* in the Philippines and East Indies) in turpentine or mineral spirits. The whitest and best grade is known as Batavian dammar. Its chief uses are as a colorless component of lacquers; though, when dissolved in turpentine, it produces a colorless but rather soft film.

Japans—The term, japan, includes two distinct classes of product; painters' japan and decorative japans.

Painters' japan is a resinate drier.

Enamels—As commonly understood, an enamel is a special paint made with a varnish vehicle instead of oil, spirit, or oleoresins. The term, enamel, is very broadly and loosely applied, comprising at one extreme what are designated as "air-drying japans" and, at the other, what might be better described as varnish-paints.

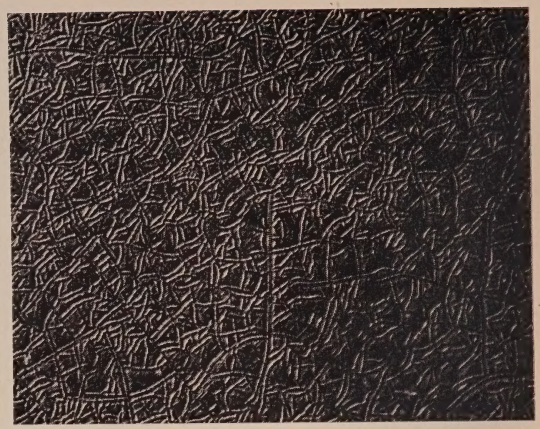
Enamels are air-drying or baking coatings, to which color and opacity have been imparted by the addition of pigments and, in some instances, dyes. They may have high or medium luster, or no luster at all.

Gloss oil, a solution of rosin in benzine, with or without a small percentage of drying oil, is used chiefly for imparting a temporary finish to unimportant articles, such as barrels.

Long oil and short oil are terms referring to the relative proportions of oils to resins. A long-oil varnish is generally slow drying, tougher, and more elastic than a short-oil varnish. Oil length is measured by oil in gallons to the hundredweight of resin.

Clear varnish is a transparent varnish, containing no pigment. Varnishes containing pigments are known as pigmented varnishes.

Flat varnishes designed to produce a matt (lusterless) finish, are special products of varied and often complex composition. The flatting may be produced by including one of the waxes or stearates, of which the most commonly used is zinc stearate. In flat mixing varnishing the percentage of volatile thinner to oil is materially increased. This type of varnish is largely used in



THE EFFECT OF TIME ON VARNISH. At the left is a picture (magnification: x6) of a good clear varnish film after 48 weeks' exposure in Florida. The panel shows no checking or cracking, has good gloss, and would be rated in satisfactory condition except that the panel shows some peeling from the edges. One sees virtually only the texture of the wood! At the right is a picture (also x6) of a poorer quality varnish under the same conditions. Here the surface is uniformly checked and cracked and the coat has become darkened as almost to obscure the grain. (S-W photographs.)

the manufacture of flat wall paints and under coats.

Color varnishes, in contrast to enamels, are usually interior varnishes to which transparent or translucent coloring matter has been added. When the coloring matter is opaque, the varnishes are properly designated as enamels.

Rubbing Varnish is a hard-drying varnish, to be rubbed with a soft abrasive and water or oil to a uniform level surface. Varnishes of this class are usually of the short-oil type.

Baking varnish is intended for use on either wood or metal objects to be dried by heat, usually in a suitable oven. A baking varnish, as a rule, contains more oil and less dryer and is more elastic than an air-drying varnish for similar use, as the baking process will dry a varnish containing considerable oil in a reasonable time. Tests have proved that varnish, when properly baked, is more resistant and durable than the same varnish when air-dried, due principally to more thorough, uniform polymerization.

Mixing varnishes are those intended to be added to paints for the purpose of imparting luster or hardness or both. The chief requisites for a mixing varnish is that it shall mix without separation, precipitation, or reaction with any constituent of the paint.

Paste wood fillers, supplied for filling the grain of hard woods so as to produce a level, non-absorbent surface for varnishing, consist usually of finely powdered transparent or translucent mineral substances ground in a special type of varnish. They are applied by brushing and, after setting but before hardening, the surplus is wiped from the surface of the wood. They may be colorless, or colored so as to utilize the grain patterns for decorative effect.

Liquid wood fillers are varnishes of low viscosity, usually containing very finely divided transparent or translucent solid matter, for use as a first coating on porous, fine-grain woods, such as poplar and white pine, and to afford a non-absorbent surface for the succeeding coats of varnish. They are frequently colored so as to stain and fill in one operation.

Varnish removers are blends of organic liquids designed for the rapid softening of old varnish coatings, so that they may be removed easily by scraping.

Uses of Varnishes

In the selection of a varnish, the reputation and experience of the manufacturer is of first importance. The varnish user will be safer in selecting a manufacturer than in selecting a varnish.

The only safe test for a varnish, no matter what its intended use, is actual service, and, where time for such a test is available, it should not be neglected.

Quality, of course, is another prime consideration governing the selection of varnishes. That point being conceded, the situation, purpose, color, kind of surface and the style of finish desired should also be brought to bear on the choice.

The finishing coat is the final coat of varnish applied to a surface for decorative effects. It may be the first and only coat on cheap articles, where nothing beyond a superficial finish is required; it may be the third, fourth, or fifth coat on interior wood work; and it may even be the fifth or sixth on fine coaches, and so forth. As a general rule, no less than three coats will produce a satisfactory finish.

Interior varnishes are designed for use on interior surfaces of dwellings and other inhabited structures. As the effects required are diverse, the varieties are numerous, including varnishes intended to produce, without further treatment, on all kinds of surfaces, from a lusterless, wax-like coating to a highly lustrous coating. In still another class are the rubbing and polishing varnishes.

The qualities most desirable in interior varnishes are fair body, moderately rapid drying, fairly light color, fluidity, moderate hardness, indifference to occasional moisture, permanence of luster, and durability. As interior varnishes are not subjected to the severe conditions of outside exposure, they may, without detriment, to be inferior to exterior varnishes in their qualities of resistance.

Floor varnishes—The use of floor varnish is indicated by its name. Shellac varnish is much used for this purpose, especially over light colored wood; but the newer quick-drying floor varnishes are more durable. Floor wax is generally applied periodically over shellac.

Since the largest application to floors is to those already in use, convenience requires that a good floor varnish be highly elastic, dry moderately hard over night, and be ready for use within 48 hours, be tough and resistant to shock or abrasion, and be unaffected by moderate contact with moisture. It possesses, in fact, the general qualities of a spar varnish, except that it dries more quickly to a harder film.

In the proper care of varnished floors, the most important precaution is that a fresh coat of varnish be applied before the old coating has worn through at any place. If this precaution is neglected, it will be practically impossible to produce an unbroken surface without removing the entire coating.

Linoleum Varnishes are special, highly flexible and elastic varnishes used in both clear and pigmented forms as finishing coats on linoleum floors, and the like. Good floor varnish makes an excellent material for renewing these.

Exterior Varnishes are designed to resist exposure of the exteriors of buildings. They must be durable, elastic, resist abrasion, moisture, the atmosphere, and the light and heat of the sun.

Insulating Varnish is one designed to protect electrical conductors and the like, and at the same time, to prevent leakage of current, short-circuiting, and so forth. These are special products in which the prime desideratum is permanent non-conductivity. Shellac and some of the synthetic resins have high dielectric strength.

All-Purpose Varnish is a general utility product designed to meet all the requirements of non-professional use. Such a varnish, properly formulated and made, will serve all ordinary uses and requirements.

Polishing Varnish, commonly encountered in such occupations as piano finishing, is similar in character and qualities

to rubbing varnish, but capable of receiving and retaining a higher luster.

Flowing Varnish is on designed to produce a smooth lustrous surface without rubbing or polishing. A good flowing varnish must spread evenly and smoothly, must not set up too rapidly, and, when dry, must present a lustrous surface free from brush marks.

Dipping Varnishes are very fluid varnishes intended to give, rapidly and economically, finish to articles, without the manual labor of application. The articles are dipped in tanks of special form and then suspended to drain and dry. Many of this class of varnishes are baked after dipping.

Spraying Varnish is especially intended for application by the spraying method in general use for finishing manufactured articles. These products are different only in their higher content of volatile thinner from varnishes intended for brushing.

LACQUER

In the formulation, selection, and use of lacquers, whether of the nitrocellulose or cellulose acetate type, the consumer must rely largely on the producer of lacuqer for information and guidance. These producers employ large staffs of technical specialists in their laboratories, in their plants, and in the field, and are competent to guide the consumer in the selection and technical use of such products.

It is a conservative statement of facts to say that it was the technologists of the lacquer and synthetic resin industries that forced the necessity of research, experimentation and development.

The new science introduced and spoke a new language—chains, linkages, isomers, substitutions in numerical positions, plasticizers, solvents, diluents, synthetics—an entire new language to be mastered and comprehended.

As a consequence, there is not only a new lacquer industry, but a new varnish industry as well, and, in the laboratory, the two, to an extent, coalesce. There is, generally speaking, no distinct line of demarcation between varnish and lacquer. There are, of course, many products which are strictly cellulose lacquers and many which are strictly gum varnishes, but there is no longer any clear dividing line separating the two types. This is altogether to the advantage of the consumer who is thus enabled to select exactly the finish best adapted to his requirements for a definite purpose. On the other hand, the multiplicity of available products leaves the innocent bystander so practically helpless that his only resource is the ancient rule—try all things, hold fast to that which is good—and, when found, keep on trying others which may prove even better.

The last possible linkage or modification has not been tested—the possibilities are, in fact, almost limitless, and until at least the more promising of these are explored, we must expect new chemical combinations to replace the old ones. This, however, may be affirmed without reservation: Never, in the age-long history of experiment and investigation, have the products of the industry so amply satisfied the requirements of consumers.

Definition

In the earliest meaning, the term lacquer designated a class of extremely fluid, colorless varnishes, designed to produce a thin lustrous coating on metal surfaces in particular to preserve the original luster by excluding moisture and gases. In more recent years, however, in America and Europe, the term lacquer has become largely restricted to coatings of which the characteristic ingredient is a solution of nitrocellulose.

The range of industrial application of lacquer is very wide—from the coating of lead pencils to the finishing of automobiles and furniture—and each industry has devised means for rapid and economical application. On large scale work, cellulose lacquer is applied by dipping or tumbling. In all cases, the attendant fire hazard must be taken into consideration and adequate provision made for the removal of vapors.

Nitrocellulose lacquers may be used on floors, but it is safest—especially if the floor be stained—to use a dewaxed shellac varnish as a priming coat. If the floor has already been shellacked and waxed, the wax must be removed completely with solvents before the lacquer is applied.

Lacquer Components

Generally speaking, the clear, solid, film-forming portion of lacquers is composed of nitrocellulose, a gum or resin, and a plasticizer or softener, while the vehicle consists of a solvent which evaporates readily at room temperatures. The film-forming constituents are dissolved in the volatile portion which is carried onto the surface where the film is deposited by evaporating as rapidly as is consistent with the formation of a smooth, strong, and durable surface.

Nitrocellulose, highly flammable but not exposive, is a nitric acid ester of cellulose, produced by subjecting the shorter fibers (linters) of cotton to the action of mixed nitric and sulphuric acids. If the nitration is complete, the product is the familiar explosive, guncotton. The reaction, however, is carefully controlled, stopped at the proper point, and the excess acid removed by washing with alkaline water. The water is removed by centrifuging, followed by a treatment with alcohol to remove the residual water. The final product is the nitrocellulose of the lacquer industry.

The acetic acid ester of cellulose, prepared by a process similar to that for nitrocellulose (acetic anhydride replacing the nitric acid in the reaction), is non-flammable. Its most important use is in non-flammable (safety) motion-picture and x-ray film, though it is also finding increasing use in the manufacture of brushing lacquers, lacquers for hot surfaces (steam pipes and the like), airplane dopes and finishes, and other miscellaneous uses.

The raw material for these products is usually obtained by cleaning worn-out or discarded motion-picture film, although most of the film scrap available is still of the nitrocellulose type. An appreciable percentage is, neverthless, from virgin cellulose acetate.

The finished lacquers contain plasticizers, resins, oils, solvents, diluents, and the like, similar to those found in the corresponding nitrocellulose lacquers.

Solvents—There are quite a number of organic liquids which dissolve nitrocellulose from which can be chosen those to be used as the vehicle of a lacquer. Some of them are solvents for nitrocellulose alone while some dissolve also the gums, resins, and oils used in the formula. There are some solvents which do not evaporate at ordinary temperatures and so serve as plasticizers and softeners.

The several solvents vary in their evaporation rates, and may be classified as rapidly evaporating, slowly evaporating, and very slowly evaporating. Too rapid evaporation of the solvent may reduce the temperature of the air adjacent to the drying lacquer to such a point as to cause precipiation of moisture and subsequent clouding of the film. Too rapid evaporation also reduces flow and prevents the formation of a smooth film. On the other hand, too slow evaporation of the solvent will unduly retard the drying and the final hardening of the film.

Resins—The natural resins, esterified resins—both rosin (as ester gum) and copals — and many of the synthetic resins soluble in lacquer fluids are used in lacquer manufacture.

The list of synthetic resins used in specialized products of the paint, varnish, and lacquer industry includes alkyds, phenolics, ureas, melamines, vinyls, mimylidene, ploystyrene, and silicones. Some of the specialized coatings which involve the use of synthetic resins are designed to be baked on the surfaces for which they are intended, applied in controlled temperatures, or hot as in the case of anti-fouling coating which is applied to ships' bottoms with specially heated spraying equipment.

Plasticizers — Since unmodified nitrocellulose films are very hard, brittle, and non-elastic, plasticizers are introduced to insure permanent elasticity, flexibility, and adhesion, as well as to reduce flammability and improve luster.

Camphor was the earliest of this class used to plasticize celluloid, and early lacquers made from celluloid scrap, therefore, contained it. Castor oil, also one of the early plasticizers, is still in use.

A large number of plasticizers—products of modern chemical research—are available.

There is an intermediate type, in which resin and plasticizer are combined.

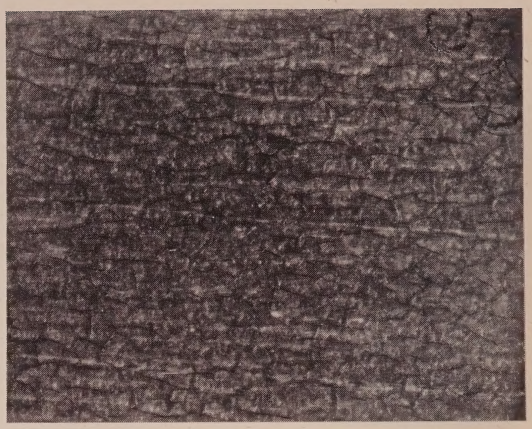
Other Ingredients—If color is desired, pigments or dyes, or both, can be incorporated in the usual manner, depending on the color required. When pigments are used, the product is called lacquer enamel.

Bronze powders and natural or synthetic fish scales are sometimes utilized to obtain special color finishes.

In some cases, drying oils or inert pigments are incorporated into nitrocellulose lacquers to impart various special properties.

Kinds and Uses of Lacquer

Lacquer dries through the evaporation of solvents and diluents, leaving the solid film in place, Thus, lacquer is strictly an air-drying finish. Oil-base or synthetic finishes dry by oxidation or polymerization and may take much longer to dry, even though baked at elevated temperatures. The speed of drying of a lacquer from a few minutes



THE EFFECT OF TIME ON LACQUER. Photograph at the left (magnification: x6) represents a good lacquer film after six months' exposure in Florida. About all that can be seen is the slight orange peel from spray application. This could also illustrate fresh lacquer. The photograph at the right (also x6) represents the typical failure of a lacquer by checking and contraction of the film. This lacquer was not well formulated and showed checking as early as six months. Lacquers are not recommended for exterior usage on wood for the reasons pictured here. (Sherwin-Williams photographs.)

to a few hours, can be easily adapted to almost any requirements by the choice of suitable solvents and diluents.

The answer to the question of durability of lacquer on exterior surfaces is found in the fact, for many years, about half the automobiles have been finished with this type of lacquer.

In most cases, nitrocellulose lacquer may not safely be applied directly over oil paints. The lacquer liquids soften and swell the paint coating and cause lifting. A thin coating of dewaxed shellac varnish over the paint will prevent this.

Lacquer may be removed by the use of lacquer solvents. Each manufacturer supplies removers adapted to his own product. Removers are also used for the correction of faults, for the removal of spots, and so forth.

Lacquer Enamels — Highly pigmented lacquers are known as lacquer enamels.

Flat Lacquers are generally clear lacquers to which has been added 2 to 5 percent of a flattener for the purpose of eliminating the high gloss of the original clear lacquer. Flat lacquers are recommended only for interior use on equipment such as wood furniture and the like.

Cracking Lacquers sometimes designated as crackle finishes are formulated so that the coat will develop fine cracks in an intricate, pleasing pattern or "cobweb" effect. These are applied over a foundation coat of hard, drying lacquer. Wrinkle finishes are similar.

Crystallizing Lacquers are those containing in solution substances which, as the volatile solvents evaporate, will crystalize in beautiful patterns of pleasing colors. The color and the pattern depend on the substance selected.

Brushing Lacquer, as the name implies, is a lacquer to be applied by means of a brush in the same manner as paints, enamels, and varnishes.

Modern brushing lacquers are compromises between synthetic resin finishes and nitrocellulose lacquers, since, in addition to nitrocellulose, they ordinarily contain a high proportion of synthetic resin, thus improving the brushability of the succeeding coats.

Naturally, the drying time of these lacquers must be prolonged sufficiently to permit of easy brush application. By slow evaporating solvents, together with a suitable diluent, brushing lacquers which brush as easily as oil-base varnishes and enamels can be readily formulated for many purposes, particularly as architectural finishes.

Lacquering Process

The actual lacquering procedure, will differ with different industries and the material to be coated, but the following indicates the general practice.

Priming Coat — Ordinary metal oil primers and thin pigmented lacquer base primers are applied with the spray machine or with the brush.

Surfacer—Heavily pigmented lacquer base coating, rubbed with sandpaper and water, or fine abrasive, is applied in one or more coats as required. This coat is also sanded to a level surface.

Finishing Coat—Non-settling lacquer enamel, either pigmented or clear, usually requiring dilution with a lacquer thinner. If a dull finish is required, a special rubbing compound or pumice and water is used on a felt pad, as with ordinary varnish. The main requirement for its successful use of primers is the cleanliness of the metal. Any foreign material of an oily or waxy nature affects the adhesion to a large degree. Almost always primers are applied by spraying. Brushing does not give satisfactory results, since the finishing coats soften the primer and brushing has a tendency to pick up the primer, intermixing it with the finishing coats.

Priming Coats — Lacquer primers, valued for their bonding or adhering qualities and the ability to retain this property after exposure, are essentially clear lacquers having exceptional adhesion to the particular surface for which they are designed. They may or may not be pigmented, but mostly do contain pigment but only enough to guide the operator in obtaining a smooth, even coat.

Lacquer primer is a first coat applied on a surface that is to be coated with lacquer, this first coat to contain nitrocellulose, resin, plasticizer, and solids. It may not contain pigment. Usually it does not contain sufficient pigment to permit sanding. A special type, however, of lacquer primer which is used as a first coat on wood is usually made up with inert pigment so that it does sand freely.

For an unpigmented lacquer, priming or foundation coats are similar to the body coats, with the exception that it usually contains more resin, oil, and plasticizer to insure adhesion.

Lacquer priming coats for wood are commonly called sealers.

Over stained wood, special coatings not permeable by the lacquer (dewaxed shellac varnish, for example) are used to prevent bleeding.

For pigmented lacquers, or nitrocellulose enamels, the foundation coat is also pigmented.

Sealers and Surfacers — A lacquer sealer is formulated somewhat the same as lacquer primer, and it must exhibit good bonding properties and, at the same time, successfully seal the old surface over which it is used. Its chief office is that of preventing the finishing lacquer from lifting or otherwise disturbing the original finish. Great care should be exercised when applying sealers over old finishes, as it has been found through experience that an unduly thick coat has a tendency to peel on exposure.

Generally, however, lacquer sealer is considered to be the first clear coat of lacquer applied to a wood surface—for example, furniture — and is designed chiefly to keep the grain from raising, lie on the surface of the wood rather than penetrating it, and being an easy sanding material so that, when sanded, a smooth even surface is obtained for application of the finishing coats which do not penetrate through the sealer, thus giving a smooth even finish without showing ridges due to the grain of the wood and the like.

The lacquer surfacer forms an intermediate coating between the primer and finishing coats when rough, scratched, or uneven surfaces are being finished. Its function is to give fill or build that fills in the rough uneven surface, and,

when sanded, yields a smooth even surface for the application of the finishing coats. Desirable characteristics in a surfacer are its ability to fill, its easy sanding qualities, and ability to hold any finishing coats—that is, not being so porous that finishing coats have a tendency to be absorbed or dulled.

Wood sealer has many of the qualities of both primer and surfacer.

USE AND CARE OF EQUIPMENT

The majority of equipment troubles are directly traceable to neglect or to improper cleaning of equipment after use.

Spray Equipment

The main point in spray-gun maintenance is to keep it clean.

Clean the gun thoroughly with a brush and solvent on the outside. Spraying solvent through the gun will usually suffice.

Never leave the entire gun in solvent over night, as the solvent will remove grease from packing and moving parts, thereby causing the gun to spit.

If the gun spits, it could be that (1) the packing has become hardened or loose; (2) the fluid tip gasket does not make a perfect seal; and (3) a leak in the fluid tube from the gun to cup air into the fluid passages where only paint should be.

The hole in the top of the cup attachment must be open at all times or it will be impossible for the contents to get out.

After using synthetic resin enamel (gum lacquer) especially, the gun should be cleaned immediately. If synthetic hardens in the fluid passages of the gun and fluid tube, it will be very difficult to remove.

Some users, instead of cleaning the gun thoroughly every night, hang the entire gun over a can of solvent with only the spray head immersed. In this way the packing is not harmed and the enamel is kept soft until the gun is used the next morning.

One of the main causes of inferior results in spraying is improper air pressure for the various materials used. Do not use higher air pressure at the spray nozzle than is necessary. Too high pressure creates an excessive mist about the main body of the spray and causes inefficient operation and poor results.

Success in spraying is largely due to the operator and his gun. If the operator uses too much or too little air pressure, orange peels or runs will result instead of a smooth finish. Enough material should be applied so that the surface appears wet, but not heavy enough to cause runs and sags.

Materials must be strained into the spray container through cheesecloth or wire screen of such mesh or gauge as to remove all lumps, skins, and anything else which might clog the spray head.

While different kinds of materials of about the same viscosity can be sprayed with the same spray head, it is recommended that for more satisfactory results, spray heads be used for materials of widely different types.

Oil and water in the fresh-air supply are very detrimental to any finish. If an approved type of oil and water separator and air regulator is used—and cleaned at frequent intervals—this trouble can be eliminated.

The Type MBS gun, with No. 30 EF spray head, will spray synthetic enamels as well as the cellulose lacquers.

Brushes

After a new brush has been used in varnish it should be kept in a brush keeper, suspended so that the bristles are all immersed in a brush-keeper varnish, a finishing varnish made without driers and, therefore, practically non-drying. Any varnish manufacturer can supply both the keeper and the varnish. This is of prime importance, as almost any deviltry may result from the use of a dirty or improperly kept brush. Never keep brushes in linseed oil nor in turpentine, nor washed with the latter. If washed or kept in turpentine, seedy varnish will usually result.

Brushes used with gum lacquers may be cleaned with mixed solvents supplied for the purpose by the manufacturers, or with a mixture of one-half each of alcohol and acetone. It is advisable not to use the same brush with gum lacquers and nitrocellulose lacquers.

For cellulosic lacquers, it is still safest to depend on the manufacturer for the proper cleaner, although this same 50-50 alcohol-acetone mixture will serve in most cases.

Brushes which have been used with oil paints should never be used with varnishes or lacquers of any type.

DEVELOPMENTS AND TRENDS

Until compartively recently, the products of the paint, varnish, and lacquer industry were generally assumed to have only two main purposes: First, the protection of surfaces and, second, decoration.

Color and Functionalism

Within the past few years, science has established a third important use for paint—functional painting—the considerations for which are quite separate from the previously accepted limitations of the uses.

The time-tested ways and means which have proved adequate for the protection and decoration of ordinary surfaces may be wholly unsuitable for special needs. These special needs—which may involve resistance to scores or even hundreds of different kinds of chemicals in various forms and exessive abrasions, bending, submersion, and fouling—are made by prescription to fulfill specified functions by formulators of specialized production and maintenance finishes in the paint, varnish, and lacquer industry.

While many of these specialized finishes are of great beauty, any attractiveness must be concurrent with the specialized factors.

Functional painting is rapidly becoming a must in progressive industrial establishments. Definite demonstrations that accidents are more frequent, eyestrain is increased, and headaches are multiplied, and consequent loss of manhours, and moral is lowered by neglect scientifically to apply painted color in conjunction with modern lighting equipment in plants, factories, stores, and offices have been convincing evidence that no good business man can afford continued losses compared with which the cost of functional painting is relatively inconsequential, to say nothing of the moral obligation to the workers.

Some of the practices in industrial painting are (1) strategic painting of machines to emphasize dangerous moving parts, (2) providing the proper contrast between the color of the work in hand and the machine itself, (3) the elimination of glare, (4) the painting of floors white or light colors to reflect light upon the bottoms of planes, automobiles, or other things which require lighting from below while being worked upon, (5) painting offices to cause the apparent temperature to seem warmer or cooler and a variation of colors to relieve fatigue which may be increased by monotony.

Color and Safety

The value of a standard safety code has been borne out by the experiences of the Quartermaster Corps and the Army Service Forces depots which generally adopted such a code.

The idea of standardizing a safety color code originated in the office of the Quartermaster General for use through the Quartermaster installations, because military personnel were frequently shifted from one installation to another, and new and untrained soldiers were constantly being assigned. By standardizing the code, its effectiveness is not lost where labor turn-overs are large and employes move from one plant to another.

The Quartermaster depots, working at top speed under the pressure of war, presented a fertile field for accidents, but they were rapidly minimized, in some cases virtually eliminated, as the code was put into effect. Red, green, yellow, white, and black, and combinations thereof are the colors that were agreed upon for the standard code.

Red is the basic color for the identification of fire-protection equipment and apparatus, danger, and stop signals.

Green is the basic color designating safety, the location of first-aid equipment, first-aid dispensaries, starting buttons, the "go" for traffic, and all instances where safety is to be designated.

Yellow is the color used to designate caution and for making physical hazards more visible. Where local conditions call for a more striking symbol, black and and yellow stripes or a checkerboard effect is fused.

Black, white, or a combination of the two are the two basic colors for designating housekeeping, sanitation, and traffic markings.

The basic colors and their combinations have been kept to a minimum to avoid confusion that would result with too many different signals constantly in the vision. The code was designed with great care not to conflict with any already standardized symbols not in use.

Chroma-Therapy

The positive effects of color environment upon human mind and body is evidenced by the practical utilization of color as a therapeutic agent in modern medical practice.

Owners of airlines and ocean-going passenger ships have discovered certain colors reudce the likelihood of air- or sea-sickness. For hospitals, elaborate color schemes have been devised for the rooms of patients with different types of ailments, both physical and mental. In at least one institution for the blind,

special color schemes have been utilized to aid those who still have some vestige of sight left.

Red, the most powerful color of the spectrum, suggests blood, fire, and danger, and actually induces muscular tension and stimulates certain actions. Some religions regard red as sacred and even psychologists have interesting interpretations about people who are partial to this color.

Blue, suggesting coolness, decreases muscular tension. Without exaggeration, blue induces lower blood pressure, respiration rate, and pulse rate.

Green is the most accepted of all the colors, suggesting the peaceful out-of-doors, cool and relaxing. It is used to a great extent in hospitals with the chroma and value carefully chosen (this is called chroma-therapy, or color healing).

Yellow is a gay and bright color suggesting the power of the sun. It is the strongest in luminosity, and is a powerful stimulant to the eye and the nerves.

Functionalism and Insulation

Progressive architects recognize the strategic use of paint to minimize or camouflage awkward architectural features in buildings; to make rooms seem longer, shorter, or more symmetrical by different colors on the walls; to minimize the undesirable exterior effect of too many windows of different sizes, too many dormers, or, in the case of some of the older structures, over-done trim and ornamentation.

An outstanding example of functional painting of buildings is the painting of brick walls white for greater coolness in summer. Experiments have conclusively demonstrated that the surface of a brick wall painted white is 14 degrees cooler than the surface of an unpainted brick wall. It might be assumed that a white wall would be correspondingly colder in winter, but such is not the case. The reason is that the cooling effect occurs when the wall is in direct sunlight and is relatively negligible on cloudy days and in darkness. In winter cloudiness is generally prevalent, and the periods of sunlight are much shorter than in summer. Moreover, moisture, which is a rapid conductor of heat and cold, is sealed out of the wall by the paint, with the result that, in winter, the paint acts to a degree as an insulator. So, no one need fear that painting a brick building to keep it cooler in summer will also cause it to be colder in winter.

Paint and Acoustics

Materials especially designed to aid acoustic conditions are so varied in character that they present interesting problems to those members of the paint, varnish, and lacquer industry who specialize in the formulation of production and maintenance finishes to meet specific needs.

Some materials are porous and tend to absorb sound, while others are relatively dense and may be responsible for echoes. For some acoustical conditions, a special soft and rather porous specialized finish may be required, while for other conditions considered in relation to the kinds of materials used in construction, a harder coating may be indicated. Some modern acoustical materials are made with a pattern of holes in them, and, according to the manufacturers directions, may be painted or varnished without appreciably affecting their acoustic properties.

The relation of paint to acoustics was recognized as long ago as 1922 by specialists in research in the paint, varnish, and lacquer industry, and has involved some interesting experiments. Special finishes may have an important part to play in the absorption or transmission of sound waves. A study of this subject is of importance to the decorator having in view the improvement of the acoustics of an auditorium, or even in the decoration of the rooms in theatres, schools, offices, or factories, where certain types of finishes may prove of value in many cases.

The texture of any material will largely determine the degree to which defective acoustics develop in auditoriums. Sometimes the general tone of a room is such that it is desirable to increase the reverberation. In such cases, a smooth, unbroken, high plastered wall and plastered ceilings, somewhat square and of lofty proportions, tend to give the desired effect. Hard gypsum plaster, for instance, might be advisable in such cases, although it is not as satisfactory as the softer and more porous hydrated lime plaster for places where sound absorption is desired.

A hard surface reflects and transmits sound at each impact. A panel or a painted surface containing a sufficient number of fine pores may produce a different action. The sound passing through these pores is converted into heat and thus absorbed.

If a room is dead, add metal fixtures just enough to tune up the sound. Hardness of surface aids in making rooms noisy, and this is always likely to occur where smooth, hard wall and ceiling linings are employed, as is the case of what is known as the whispering gallery of Saint Paul's. If the walls and ceilings of this gallery were given several coats of paint, it would probably lose its place in the Old World as a mecca for Cook's tourists.

When echo results from too high a ceiling, little may be done except to separate the ceiling from the floor (which is often undesirable). When echo results from the wall, to cure such echo, two methods may be considered. One method consists in changing the form of the walls so that the reflected sound no longer sets up the echo; that is, change the angle of the wall so that the strong reflecting wave is broken up and the sound scattered. In this connection, it is of interest to point out that curved walls focus sound, the waves being directed to one point. This method, however, is drastic, as a change in the walls might be too violent to the architectural design.

The second method is to make the reflecting wall a good absorber, so that the sound is swallowed up and little or none reflected. Painting the wall may accomplish this. It also fits in with architectural features. It is less expensive than the other methods and can be easily done. The paint, however, to have the greatest sound absorbing factor should have the qualities of porosity and flexibility. This mean porosity of the mass and flexibility as a whole. Consequently thickness is a very important requisite. High plasticity is desirable for certain finishes. Several successive coats of paint may be applied, or one heavy coat with special sand, cork, or sponge treatment.

In order to get at least an approximation of the sound absorbing properties of paint, a series of tests was made, using a specially constructed cylinder 3 feet long and 1 foot in diameter, placed horizontally in a wooden base. In the center of the cylinder a watch was suspended. The observer then stood with one ear at the open end of the cylinder, and slowly moved away. The point at which he could no longer hear the tick of the watch was marked. The cylinder was then lined with coatings. The results are given below, as the average of several readings by four observers.

Metal wall	40 inches
Metal wall with sand-finish paint	19 inches
Metal wall, with sponge-finish paint	18 inches
Metal wall, with cork-finish paint	14 inches

It will be noted from the above results that all of the finishes reduced the carrying properties of the sound over 50 percent. The amount of sound absorbed will, of course, depend on the thickness of the paint, the roughness of the surface, porosity, and similar data.

A relatively new development in the field of special finishes flock finishes which have the appearance of suede or soft fabric, are sometimes used on hard, non-porous surfaces to assist in the absorption of sound and to abate echoes. The flock consists of very short fibers, which may be of wool, cotton, rayon, or other material used in making cloths. A specially formulated clear varnish, lacquer, or enamel constitutes the first coating of an adhesive which may be applied by spray painting, silk screening, roller coating, or brushing. The flock may be either sprayed on the tacky surface by special spraying implements or it may be applied by hand. When the coating has dried after application of the flock, excess flock can be wiped or brushed off and salvaged for re-use.

Authorities on acoustical paints emphasize that paints for acoustical surfaces must not reduce the porosity of the surface and must have high hiding power and a certain degree of porosity. The type of paint required varies according to whether the acoustical surface contains small pores or holes of microscopic size.

Acoustic finishes present some nice problems to specialists in finishes.

Cement Water Paints

Cement water paints are important members of the paint family. Usually, their base is Portland cement, scientifically combined with other materials to meet varying conditions, and available in various colors, for use on exterior and interior Portland cement, concrete, and stucco surfaces, excepting floors and other areas subject to mechanical abrasion. They are especially recommended where it is desired to decorate and reduce the water permeability of exterior walls built of concrete block masonry or where the concrete or stucco is damp at the time of painting or may become damp subsequently.

The typical film possesses good decorative qualities as to hiding power and color. When wetted, as by rain, it be-

comes slightly transluscent or darker and appears somewhat less satisfactory than when dry; but, on drying out, the film returns to its original color and opaqueness. Tinted paint films also assume a deeper color when wetted.

Durability depends on several factors, including the composition of the paint, texture and cleanness of the concrete surface, application procedure, and severity of the exposure. It appears that Portland cement paints, properly applied to exterior wall surfaces exposed to the weather, may be expected to have a surface life of about eight years. Some cement paint jobs last considerably longer, some are less durable. The less durable jobs frequently are those involving smooth, dense concrete surfaces where there is a tendency to brush out the paint too thin and to neglect the requirements for satisfactory adhesion.

Efflorescence—Generally it is advisable to defer painting of new masonry until efflorescence has become negligible. In the case of tinted cement water paints for use on cast-in-place concrete walls, several months should be allowed for the concrete to cure before painting, to lessen the liklihood of efflorescence.

To remove efflorescence, first wet the concrete, then apply a 20 percent solution of muriatic acid and, after about five minutes, scour off the efflorescence with stiff bristle brushes. If necessary, a stronger solution may be used. The surface must then be thoroughly washed with clean water to remove all traces of acid.

Any traces of oil must also be removed from the surface.

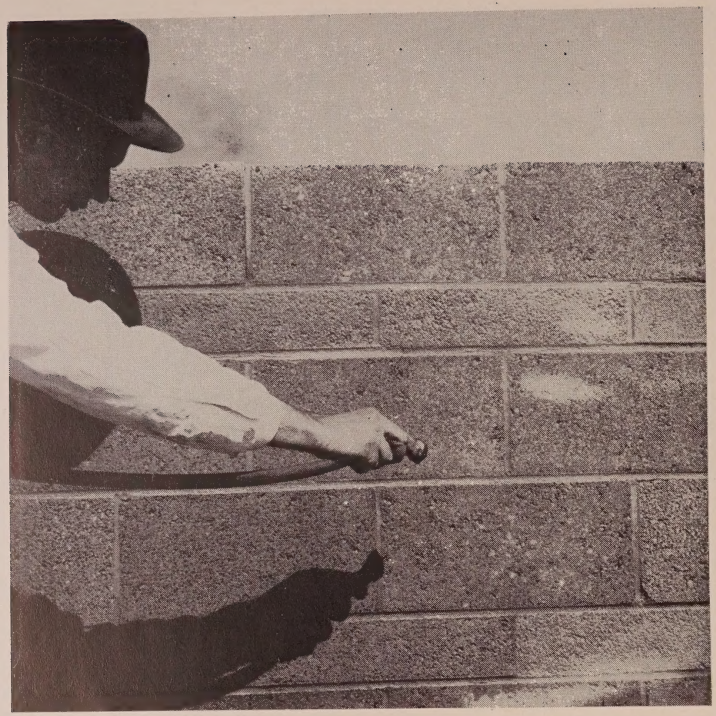
Before applying the paint, the concrete should be thoroughly wetted to control surface suction and to provide a reserve of moisture to aid in the proper hardening of the paint. A garden hose adjusted to give a fine spray is well suited for this purpose. A superficial dampening with a brush dipped in a bucket of water, as it often done, is wholly inadequate.

Usually it is sufficient to wet concrete masonry walls or other concrete that readily absorbs moisture in one operation not more than 1 hour before painting. The spray should be applied in such a manner that each part is sprayed three or four times for about 5 to 10 seconds, depending upon the absorptivity of the surface, the time being allowed between is for the moisture to soak into the concrete; the unabsorbed water serves no purpose. If the surface tends to dry rapidly, as it may in hot weather, it should be redampened slightly just in advance of painting; it should be moist but not dripping wet or with a noticeable water film when the paint is applied.

Dense concrete absorbs moisture so slowly that it should be wetted in at least two operations not less than 30 minutes apart. It will be more effective to dampen rather large areas in advance of painting so that ample time is allowed for the moisture to soak into the concrete. When the paint is applied, the concrete surface should be moist, but without free water; some suction is necessary.

Preparation of Paint—Portland cement paints are made ready for use by thoroughly mixing the paint powder and aggregate, if used, with water in the proper proportions.

A PORTLAND CEMENT BASE PAINT, properly applied and cured, will give many years of service. These eight pictures, provided by W. D. M. Allen and the Portland Cement Association, show the method of application. Top picture shows the measuring of the dry paint powder and the water according to directions. Then (bottom picture) thoroughly mix to the consistency of thick cream.



DAMPENING THE SURFACE with fine spray prior to the application of each coat of paint is shown in the top picture. Typical brushes used in the application of Portland cement base paint are shown in the bottom picture. Here are seen an ordinary scrub brush, window brush, brush which can be used with a handle, and fender brush, is excellent for applying the seal coat to coarse-textured masonry.

The proper amount of water will vary depending upon the fineness of the dry materials and should be determined by trial. The mixed paint should have the consistency of rich cream, except that a slightly thinner consistency is recommended for the first coat applied to open textured types of concrete surfaces, such as concrete masonry units.

The paint should be vigorously stirred for several minutes until it is uniform in color and consistency and all particles are thoroughly wetted. Workability will be improved by allowing the mixture to soak, or pre-hydrate, for 30 to 45 minutes prior to application. Most paints remain in usable condition for 3 to 4 hours after being prepared, although in hot weather some paints, especially those containing calcium chloride, should be used somewhat sooner.

While being used the paint usually tends to stiffen slowly due to chemical and physical reactions and evaporation of the water, and it is common practice to thin the mixture with additional water when necessary to maintain the desired consistency. There seems to be no serious objection to retempering white paints provided it is properly done. The paint should be first vigorously restirred as sometimes this operation will restore its fluidity. Any additional water should be added and thoroughly incorporated in small increments.

In case of tinted paints, it is advisable to avoid the necessity of retempering in so far as possible as the color may be altered slightly if the proportions are appreciably altered. Retempering can be largely avoided by making smaller batches which will be used before the paint stiffens excessively or by keeping the mixed batch in a tightly covered container from which the painter's buckets are filled.

Application of Paint — The surface should be uniformly damp, but with no free water. For obvious reasons, no painting should be done on frozen concrete or when the paint may be exposed to temperatures below 40 degrees Fahrenheit within 48 hours after application. Some paint manufacturers prefer a minimum temperature of 50 degrees Fahrenheit.

The paint should be applied in two coats of the same color. Preferably not less than 24 hours should be allowed between coats; in no case should the second coat be started until the first coat has become sufficiently hard to resist marking by the brush being used. In hot, dry weather, the first coat should be slightly moistened before applying the second coat. "Doubling back" or the application of a double thick coat is not conductive to good results and should not be permitted. Three-coat work may be employed if desired, but the extra coat should not be necessary and is seldom worth the additional cost.

Ideal application to coarse textured concrete requires a brush with relatively short, stiff fiber bristles, such as fender brushes (commercially sold for cleaning the underside of automobile fenders) or scrub brushes. In actual practice, however, spray and paint-brush application probably predominate. If the concrete is of smooth or sandy finish, white-wash or dutch-type calcimine brushes are suitable. The paint should be on brushes in

such a way as to be uniform in thickness and free from ridging or excessively heavy brush marks.

It is true that some commercial Portland cement paints exhibit smooth working qualities more on the order of oil-vehicle paints. However, experiments indicate that even these paints should be applied with stiff-bristle brushes if the concrete is coarse textured.

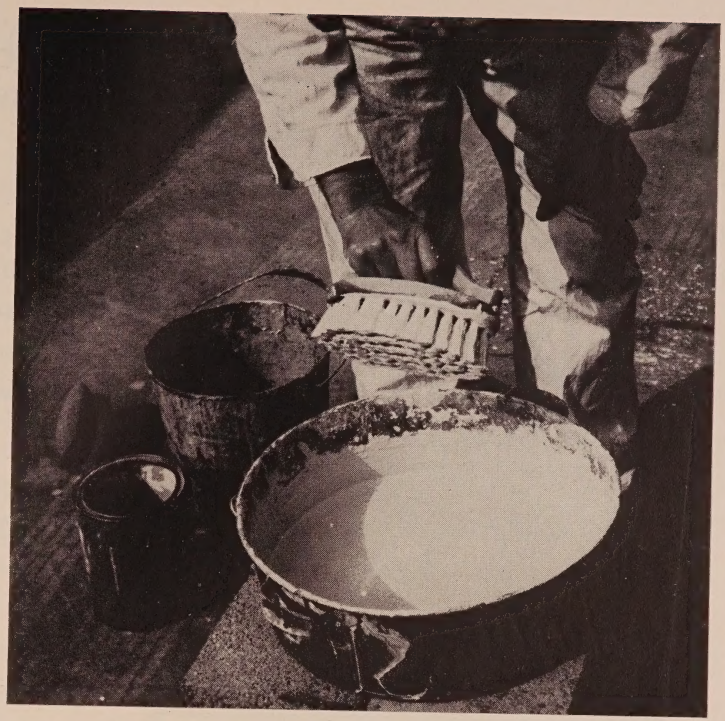
When weather conditions are such as to cause the paint to dry rapidly it is advisable to work in the shade in so far as practicable. Such practice makes it easier to keep the surface uniformly moist for proper suction and helps prevent too rapid drying of the coat being applied.

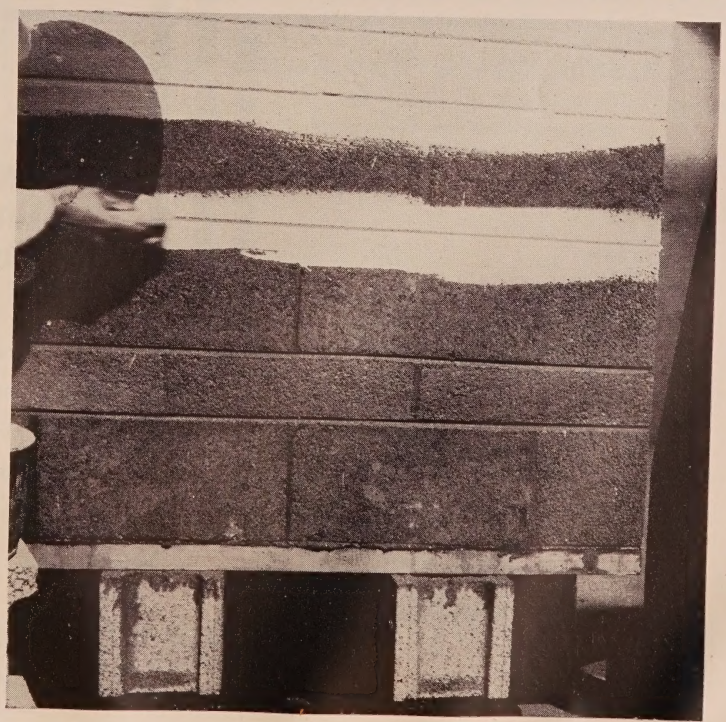
The different constituents of Portland cement paint vary substantially in specific gravity with each other and with the water; consequently, to prevent segregation and maintain a uniform mixture, the paint should be stirred frequently in the bucket.

When painting concrete masonry or other porous concrete for the dual purposes of moisture-proofing and decoration, both coats should be vigorously scrubbed on in such a manner as to work the paint back into the voids and provide a continuous paint film free from pinholes and other openings through which water might penetrate. Tests of the rain resistance of painted concrete masonry walls indicate that paints applied with spray equipment provide less protection than scrubbed-on coatings. Spray application, therefore, is recommended only on dense concrete or interior surfaces or where paint is not required for waterproofing purposes.

The proper average film thickness and coverage rate is rather difficult to estimate for Portland cement paints because of the effect of differences in the texture of the concrete to be covered. However, considering smooth concrete surfaces, it appears that a two-coat film should average about 0.015 inch thick which will be obtained with a coverage rate of about 100 square feet to the gallon of mixed paint for the two coats. If the concrete is rough textured or if the paint contains coarse filler (No. 50 to 100 mesh) a film thickness of 0.025 to 0.035 inch and coverage rate of from 45 to 55 square feet to the gallon should be sought. Two coats on very rough textured block may require as much as 1 gallon to 35 square feet of surface.

Curing—Proper hardening of films of this type depend upon the availability of moisture for chemical reaction with the Portland cement. The moisture in the concrete base, in the paint itself, and in the air is utilized for this purpose, but usually this is not enough. On most jobs it is practicable to sprinkle the painted surface two or three times a day with the same fog spray used for dampening the concrete and it is recommended that this be done between coats and for at least two days for the final coat starting just as soon as the paint has hardened sufficiently not to be damaged by the spray, usually about 12 hours after application. Damp curing in this or some other effective manner must be provided in order to obtain the best results with Portland cement paints. It will improve the hardness and durability of the paint in every case, and in some instances will mean the difference between a satisfactory and a poor job.





A BRUSH FILLED WITH PAINT is shown in the top picture. Mortar joints should be painted first (bottom picture) to insure a complete sealing of joints. Thorough scrubbing is necessary to force the paint into the open texture of the masonry. During the painting process, the paint should be stirred from time to time so that it will be kept at a uniform consistency. Second coat can be applied in 24 hours.

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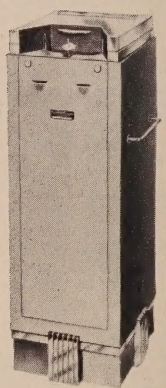

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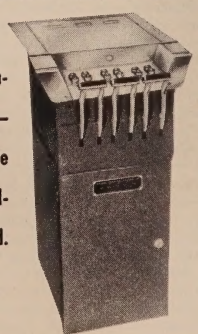

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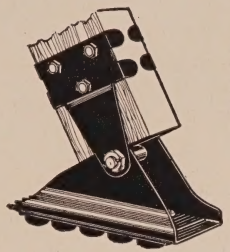

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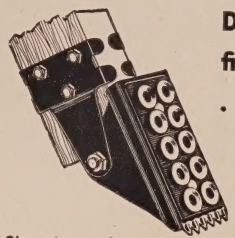

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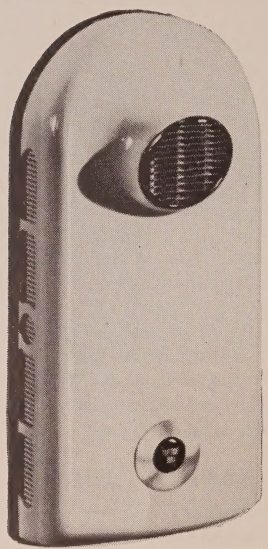
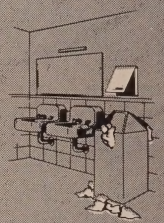


reduces maintenance costs



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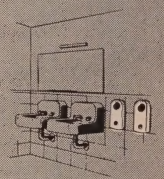

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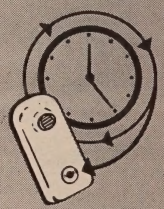

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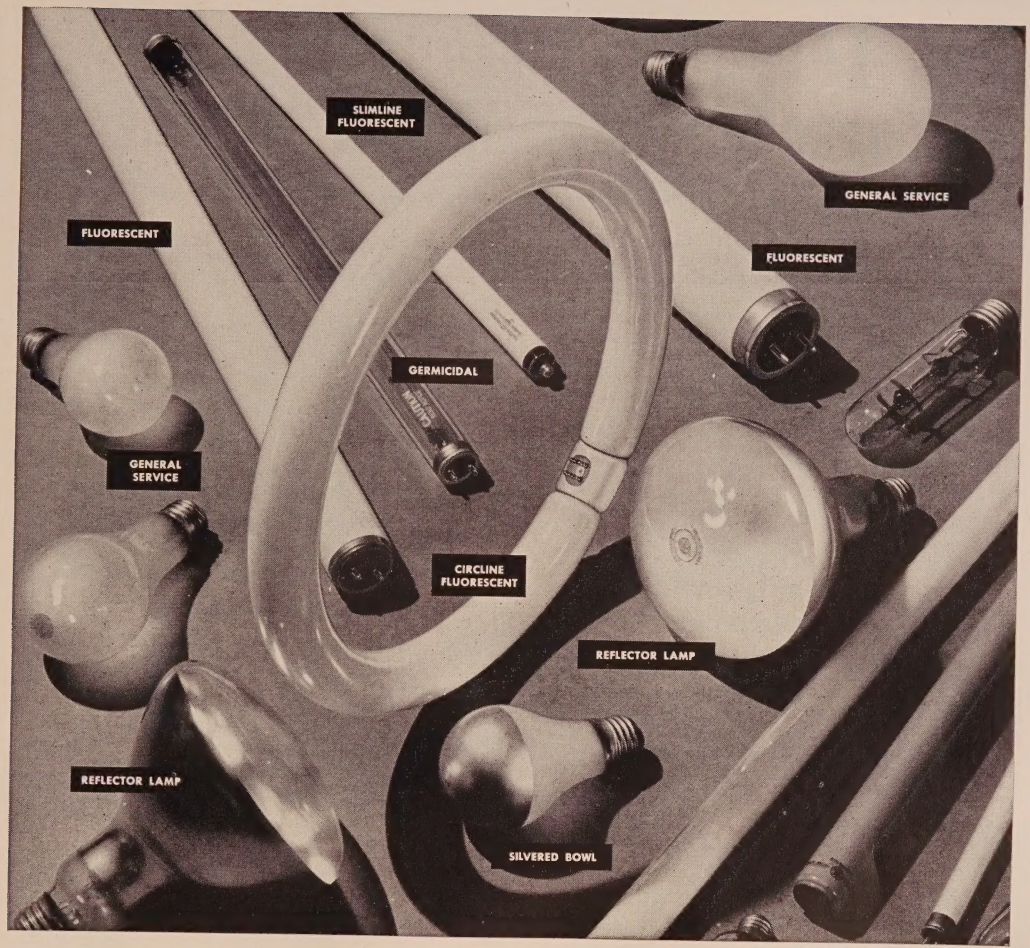

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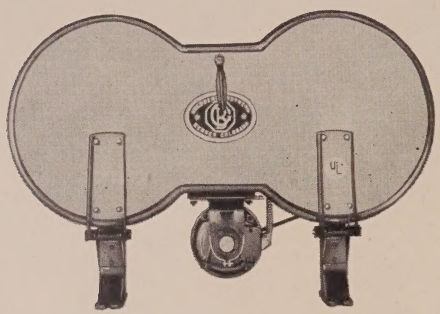

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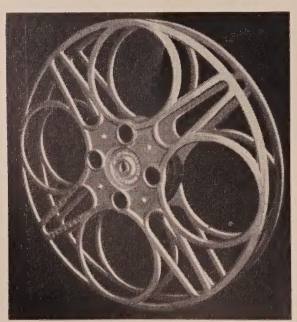

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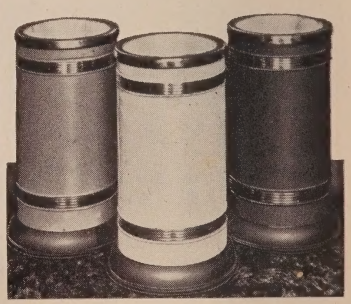

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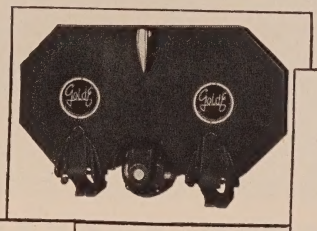

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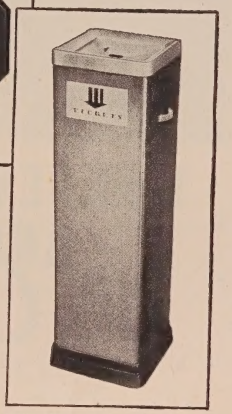

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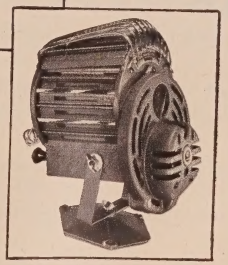

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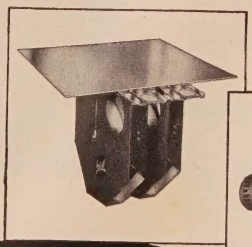

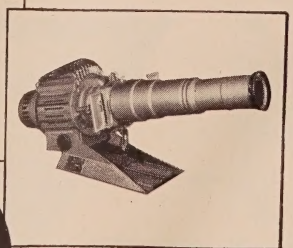

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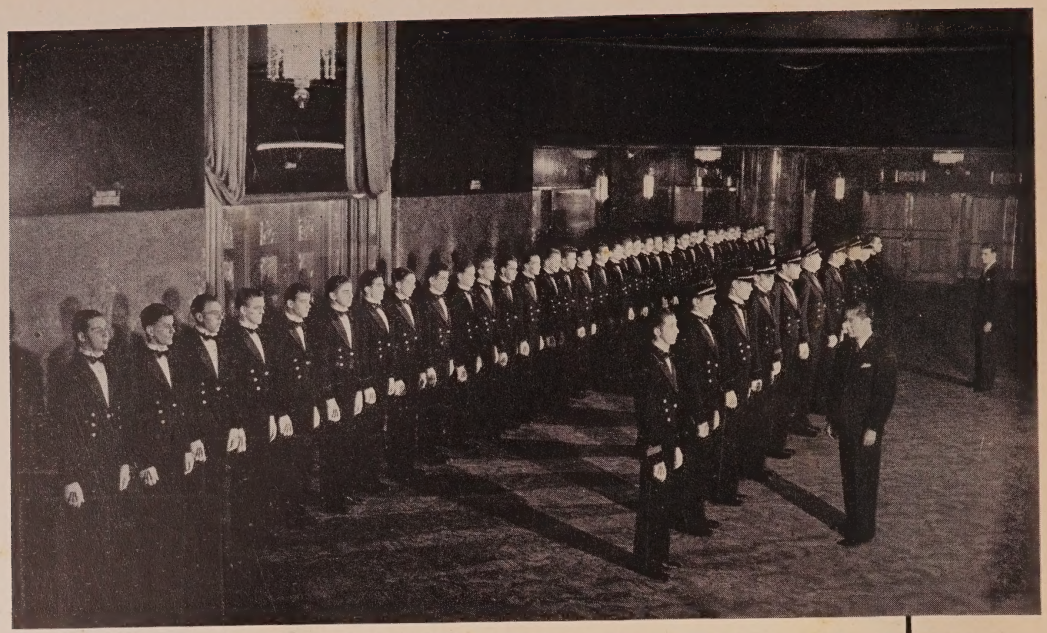

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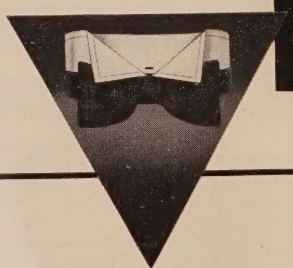

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BOOK THREE:
Management

Methods, Practices and Maintenance

SUGGESTIONS FOR THEFT PROTECTION
Howard W. Nugent 414
Steps a Theatreman Can Take to Guard Against Loss Along With a Private Organization Are Summarized

REOPENING THE DRIVE-IN
Paul Petersen and E. O. Wilschke 417
Two Experts on Peeling Off a Winter Cocoon at the Start of a New Season Review the Necessary Steps

PROPER HANDLING OF THEATRE SUPPLIES 422
An Efficient System for Ordering, Storing, and Issuing Housekeeping Items Is Explained Herein

EFFECTIVE PEST CONTROL IN THEATRES
Jacques J. Hess 425
The Various Kinds of Troublemakers Are Discussed With Appropriate Remedial Treatments Prescribed

Extra Profits

BOWLING ALLEY OPERATION WITH THEATRES
Nat N. Wexler 434
How a Mutually Profitable Alliance May Be Formed Between Two Enterprises Which Support One Another

Television and 16 mm. Film

THE GPL THEATRE TELEVISION SYSTEM 446
Video Images Are Recorded and Projected With Far Better Definition by New Film Intermediate Method

A THEATRE TELEVISION TRAINING PROGRAM 450
Both Residential and Home-Study Courses Offer Theatremen Thorough Grounding in Video Techniques

Indexes

COMPLETE SUBJECT INDEX TO 1950-51 EDITION 456
The Entire Editorial Material Is Indexed and Cross-Indexed for Easy Reference Use

CUMULATIVE INDEX TO ALL PREVIOUS EDITIONS 459
Topical References to All Articles Published in Prior Volumes of THEATRE CATALOG

Advertising:

A

Altec Service Corp. 428
Ampro Corp., The 454

B

Berlo Vending Co. 442

C

Cretors, C. and Co. 443

G

General Precision Laboratories 453

I

I. A. T. S. E. 430
International Alliance of Theatrical Stage Employees and Moving Picture Machine Operators of the United States and Canada 430

M

Manley, Inc. 441

N

National Screen Service Corp. 431
National Theatre Supply 444, 453

R

RCA Service Co., Inc. 429

T

Theatre Catalog (Back Issues) 462, 463

W

West Disinfectant Co. 432

METHODS, PRACTICES *and* MAINTENANCE

1950-51

Suggestions for Theft Protection

Steps a Theatreman Can Take to Guard Against Loss Along With a Private Organization are Summarized

By Howard W. Nugent
Manager, Department of Criminal Investigation Pinkerton's National Detective Agency, Inc.

BRIEF: ***Theatres . . . due to their ready accessibility . . . are one of the easiest preys for thieves . . . either outsiders or employees . . . Hence, the protection of theatre cash and property has been . . . for many years . . . a major concern of exhibitors . . . Unfortunately . . . just like many other types of businessmen . . . theatre operators frequently fail to take the most obvious steps to protect their funds and property.***

Every showman can adopt certain simple precautionary measures himself . . . but an additional degree of security may be added by engaging the services of a reliable protective agency . . . Discussed in the following article are the fundamental safeguards which the theatre operator himself may follow . . . and the aid which a private organization can give him . . . in preventing and uncovering instances of theft.

Although theatres annually forfeit large sums of money to holdup men, these losses are relatively slight when compared to the thousands of dollars which go into the pockets of both outside and inside thieves. The former group often consists of patrons who are quick to take advantage of the opportunity for theft presented by an unlocked door to a manager's office, boxoffice, or storeroom. Many such culprits have been known to loiter undetected in the house until it is closed for the night and then proceed to pilfer at will. Street prowlers will likewise be quick to spy any possible means of access to a theatre and will make off with any cash or property they can lay their hands on.

By and large, however, dishonest employees are responsible for the majority of losses in cash receipts and property. Unscrupulous doormen often become so proficient in the well-known art of "palming" tickets that their sleight-of-hand tricks escape notice completely, and dishonest cashiers, who often work hand in hand with dishonest ticket takers, frequently become expert also in such practices as the resale of tickets. As a matter of fact, there have been some instances in which the manager, doorman, and cashier have all acted in collusion to steal from the owner by the use of counterfeit, extra, or previously sold tickets. Similarly, dishonest refreshment stand personnel have been known to steal funds and merchandise from this important source of theatre revenue.

GENERAL SAFEGUARDS

While the number of schemes used to defraud and pilfer theatres are practically unlimited in number, losses from such crimes may be sharply curtailed or eliminated completely by the adoption of a few common-sense protective measures.

CHECKING, both blind and open, usually depends on small hand counter; however careful and studied recording of results, over a sufficient period to establish a pattern, is usually needed to establish theft.

Safes

Every theatre should be equipped with a strong burglar-proof safe, kept carefully locked at all times other than those when it must be opened to make deposits and withdrawals. Only completely trustworthy employees should know the combination of the safe, and when one of them leaves the employ of the theatre, the combination should be immediately changed. The door of the room in which the safe is located should be kept locked whenever valuables are transferred to and from the safe to prevent would-be thieves from entering.

Periodic tests should be made of any protective devices connected to the safe, and all types of checks and equipment for their preparation should be placed in the safe, along with actual cash, to guard against possible forgery.

Locks

The theatre premises should be equipped with strong doors, secure locks, and barred windows wherever possible. If a key is lost or missing with the possibility that someone may make a duplicate of it, the lock in question should be changed immediately.

Outside door locks should be equipped with dead bolts, for spring bolts may be forced back by inserting thin flexible blades of metal or celluloid between the the door and the jamb. Keys should never be issued to employees who do not need them to perform their duties efficiently.

Protective Devices

In addition to burglar alarm systems, "protection" signs often act as deterrents to prospective marauders. These signs, however, must be supported by a reputable organization performing sufficient detective service to back up the warning. If not, they merely give the user a false sense of security and are seldom respected by criminals.

Ticket Controls

Since ticket manipulations constitute one of the prime sources of revenue loss, every precaution possible should be taken to stop them, by mechanical as well as human means. Ticket-issuing machines with counters and registers to check numbers and denominations of tickets sold, stub rod control boxes and ticket choppers to facilitate the maintenance of automatic records, and perforated tickets with the date of issuance printed thereon and which do not need to be folded and cannot be counterfeited, thus making "palming" or reselling infinitely more difficult, are all recommended for this purpose.

All modern means are helpful toward minimizing both the opportunity and the inclination to steal.

Miscellaneous

The exercise of caution and good judgment in the hiring of personnel is one of the most important steps theatre management can take to protect itself against theft. No person should be employed for a position of responsibility and trust without a careful investigation of his or her background with regard to character, reputation, periods of employment and unemployment, habits, associates, and all other pertinent facts which will aid in determining the individual's qualifications for a job in the theatre.

Even though there is no apparent evidence of dishonest practices, it is often advisable to conduct periodic surveys among employees who handle money and merchandise to uncover any possible

UNIFORMED GUARDS check the safe in a theatre office as an added available Pinkerton service.

illegitimate operations. Any help suspected of gambling heavily, borrowing excessive sums, or living beyond their means should be immediately investigated, as they are likely to become dishonest to meet their obligations.

Secondly, the theatre manager or other reliable employee should have armed protection by the police or other qualified parties when he goes to the bank to deposit receipts or procure payroll money. If it is at all possible, funds should not be carried to and from the bank at the same time every day or night or along the same route. If automobile transportation is used, the car should be a private one, not a taxicab, with the doors kept locked during the entire trip.

Lastly, in keeping with the principle that nothing should ever be taken for granted in the protection of theatre cash, money should always be passed below the level of the deal plate when it

CHECKING can be an inconspicuous enterprise that the average patron or employee will not notice, as witnessed by the Pinkerton man at the extreme right with a counter concealed in his coat pocket.

becomes desirable to take some of the bills to the safe in the office, and all employees empowered to transfer money from the boxoffice to the office should be careful to conceal it in such a way that it is not seen by either patrons or passersby.

PROTECTIVE AGENCY HELP

Since a theatre operator cannot possibly be in his house all of the time to see that it is being run strictly in accordance with the rules and regulations, he would do well to employ an independent, qualified organization, such as Pinkerton's National Detective Agency, Inc., to do so for him. Steadily engaged in the business of protection since 1850, Pinkerton's offers a wide variety of service for the theatre which ranges from guard duty to the actual supervision of ticket sales.

Functions

If any improper practices are suspected in theatre operation, they can usually be readily detected and eliminated by qualified operators, dressed in plainclothes so that they will not be distinguishable from regular patrons. In some cases, a detective may be assigned to work as a doorman, usher, porter, etc., to establish the irregular practices and identify the guilty parties. In addition to their usefulness in uncovering cases of fund mishandling, these agents may also be effectively employed to ferret out such evils as discourtesies by employees to

WRAPPING UP A CASE is handled by a Pinkerton investigator here shown questioning a cashier and doorman. Note the counter in his right hand, plus actual theatre tickets, give him a distinct advantage.

PAYROLL ESCORT is another Pinkerton service which teams with Deposit Escort as a means of protecting theatre cash against theft of any nature whether inside or outside of the theatre building.

patrons, hazards likely to result in injuries to customers, violations of fire regulations, disorderly actions by patrons, lax management, etc.

As stated previously, hiring of new employees without a thorough probe into their backgrounds is foolhardy and prejudicial to efficient business management. An investigation by an organization experienced in this type of work may well save a theatre operator from serious losses through theft by a dishonest member of his staff. The following true case is an excellent example of the danger inherent in neglecting entirely or making only a perfunctory check of prospective employees:

A female cashier of questionable background was employed by the manager of a theatre without a pre-employment investigation. She shortly entered into collusion with a head usher who frequently acted as a relief doorman. At first, only a few tickets, said to be sufficient to pay the cost of bus fare and lunches, were held out, but the number rapidly increased.

Scarcely had this pair started their depredations when the head usher also entered into an agreement with one of his subordinates, who also acted as a relief doorman, to hold out tickets. Then, still another usher, who served as relief cashier, began to retrieve stubs thrown away by patrons and resold them in collusion with the regular doorman. Before long, practically the entire staff engaged in selling and collecting tickets became involved in their resale. Due to the number of employees involved in the conspiracy, it was comparatively easy to keep tabs on the whereabouts of the manager and his assistant at all times; naturally, nothing improper was done when it would have been possible for either of them to detect it.

In time, of course, the steady decline in revenue was noticed, and Pinkerton's was called in to investigate. Trained agents, who posed as patrons, soon caught the culprits "red-handed" and the operator began to receive his just earnings again.

Such surveillance operations in connection with admission sales are among the most valued services which organizations such as Pinkerton's offer to the theatre operator. Others include: periodic inspection of the premises, regulation of crowds, escort service to banks, traffic direction, etc.

NATTILY IMPRESSIVE are the well tailored uniforms of the Pinkerton service detail.

FIRE AND PANIC LOSSES can also be minimized through periodic checks on equipment. Normal employees are prone to take for granted usual safeguards that a "strange" guard will carefully examine.

CONCLUSION

As pointed out above, there are certain precautionary measures which the theatre operator can take to cut down losses resulting from the activities of thieves. In the final analysis, however, the prevention and detection of crime is the specialized business of organized police departments and qualified investigative agencies. While the exhibitor may help to prevent losses from theft by properly training his personnel, for example, he can best minimize this risk by augmenting his efforts with the services of experts who have had years of experience in the field.

The principles of realistic theft protection discussed in this article are as applicable to outdoor theatres as they are to roofed ones. As a matter of fact, due to their more open exposure, even tighter security measures should be established for drive-ins.

Reopening the Drive-In

Two Experts on Peeling Off a Winter Cocoon at the Start of a New Season Review the Necessary Steps

By Paul Petersen and E. O. Wilschke

Supervisor, Drive-In Operations, Walter Reade Theatres, and Operating Manager, Altec Service Corporation, respectively

BRIEF: *The vast majority of outdoor theatres in the U. S. are . . . as we know . . . located in areas with fluctuating seasons of the year . . . so that drive-ins must restrict their periods of operation to the reasonably warm months . . . Therefore, these open-air amusement centers must . . . like the bears in the forest . . . go into hibernation for the winter.*

Due to its constant exposure to the weather, the drive-in must . . . of necessity . . . be as well wrapped up as possible to withstand the ravages of winter . . . Recommended steps . . . to be followed in preparing outdoor theatres for seasonal closing . . . formed the subject of a survey published in the 1948-49 Edition of THEATRE CATALOG (pp. 231-235) . . . When the warm breezes of spring fill the air again . . . however . . . the drive-in must be just as carefully prepared for reopening . . . with everything restored to first-class working order.

The following article . . . which treats the steps required to put the drive-in back in business . . . as opposed to those needed to close it down . . . has been compiled from a wealth of helpful material submitted by Paul Petersen of Walter Reade Theatres and E. O. Wilschke of Altec Service Corporation . . . The former contributed the information for the first section of the survey . . . dealing with such important activities as promotion and physical overhauling . . . while the latter furnished the pertinent data on preparing the projection and sound equipment . . . so expertly treated in the second section.

1. GENERAL PROCEDURES

Introduction

The reopening of a drive-in in the early spring for regular seasonal operation requires extensive preparations, for every part of the theatre must be put back into first-class shape. In short, almost as much attention must be given to taking the open-air showplace out of "mothballs" as is bestowed on putting it in for the winter. Of course, the ease and rapidity with which the theatre can be readied for the new season depends to an appreciable degree on the care exercised in winterizing it and the thoroughness of the preventive maintenance carried out during the period of closure.

Even though a drive-in has been carefully enveloped in protective wraps at the conclusion of the past season and a painstaking check has been kept on its condition throughout the bleak winter months, the elements do exact their toll, in spite of all precautions. Therefore, the advent of warm weather conducive to reopening will bring with it a need for a complete inspection and overhauling of the theatre.

At the same time this renovation program is launched, however, the fact that the drive-in will soon be back in operation must be widely broadcast, so that its old friends and prospective new patrons will be alerted and looking forward again to another entertaining season of movies under the stars.

Promotional Activities

After a definite opening date has been established, advance publicity should be sent to all newspapers in the drawing area announcing the reopening and outlining contemplated or actual improvements made since last season, the types of entertainment to be presented, and general theatre policy. It is often advisable to included the name of the manager in these advance notices because of the personal touch thereby attained. If the manager chances to be a new one, a path in the community is thus opened up for him, and, if he is a former manager returning to the job, he is afforded an opportunity to renew old acquaintances.

A few weeks before the actual reopening some type of teaser copy announcing the date should be placed on the attraction board for the benefit of passing motorists. Data on the changeable copy panel should be changed at frequent intervals and illuminated at night so that the interest of passersby will be maintained. This highway campaign may be climaxed by a final announcement of the initial feature attraction and the dates it will play, once booking plans have been completed.

There are, of course, a number of other media through which the reopening of the drive-in may be announced. For example, direct mail pieces to all post office boxholders and rural route dwellers have been found to be very successful. Likewise, spot announcements on local radio stations have also produced good results in many cases.

In addition to other conventional forms of advertising, such as window cards in stores and handbills, Walter Reade Theatres, for example, have discovered a great exploitational value in the posting of ads at gas stations throughout the territory carrying the opening announcement and the week's current attractions once the theatre is operating.

At the same time he is getting his advertising program into full swing, the manager must devote his efforts to lining up playdates for pictures which are suitable for this particular location. Since any haphazard approach to this important booking problem will be fatal, he must intelligently analyse the tastes of his patrons and be guided accordingly.

Last, but by no means least, among the many promotional activities which must be undertaken is the usual gala social function which precedes the reopening. Impressive ceremonies may be planned and an air of dignity lent to the proceedings by inviting the mayor and other prominent officials to attend and calling upon them to say a few words appropriate to the occasion. The additional presence of a high school or other type of local band will further the impression that the reopening is an important community affair.

Giveaways, always powerful stimulants to the creation of patron goodwill, are particularly in order on the opening night. Free popcorn, cold drinks, or ice cream are entirely suitable for

ANNOUNCEMENT ADS should run well in advance of the actual opening date.

SOMETHING FOR NOTHING in the form of liberal passes provides a low cost out-of-season stimulant.

DAILY TEASER ADS, gradually adding to the full message, can be one method of building patron interest in the opening date and in any new features or conveniences which have been provided during the winter hibernation. The scaffold illustration in these typical ads is a cute touch.

this purpose, and their cost to the management will be slight in comparison to the continued support they aid in winning for the theatre.

Physical Preparations

Running concurrently with the promotional program on an almost around-the-clock basis is the detailed schedule for putting the physical components of the drive-in back in tip-top shape. These are many and varied, but each one must be meticulously attended to, if a perfectly functioning theatre is to be ready by opening night.

One of the first steps in getting the drive-in restored to working order is notification to the utility companies to turn the water, electricity, gas, and telephone lines back on. Once these vital services are restored, other necessary projects may be undertaken.

In this connection, the theatre operator may sometimes find it advisable to call upon some of the personnel which he has recruited for the season to report ahead of opening date to aid him in refurbishing the drive-in. As a general rule, 20 to 35 employees are often required at the beginning of the season, depending upon the size of the theatre, and some of these may well be able to lend a hand in getting the theatre ready for opening. The task of hiring adequate personnel well ahead of time is one which should be tackled, of course, as soon as reopening plans are made.

The maintenance crew may then set about performing a multiplicity of jobs which include such important matters as: relamping and replacing bulbs, fixtures, and floodlights; painting and erecting all entrance, exit, or other directional signs; removing panels from doors and windows of buildings; cleaning, painting, and setting up playground equipment, etc.

Special attention should be paid to checking and repairing all road areas and ramps with holes, sunken spots, or washouts. Hot asphalt mix has been found to be extremely well suited to filling in these depressions. After all patching has been completed, the area may be dragged to distribute evenly the accumulation of grits frequently washed into piles in the low spots by winter storms. A heavy-gauge galvanized wire drag approximately 10′ square is ideal for this purpose.

Painting, always a major and vital task, oftentimes presents difficulties, especially when an early spring opening is planned. Indoor painting, such as that performed in the rest rooms and concession stand, is easily accomplished, but weather often hampers the progress of painting outer surfaces, such as the exterior walls of buildings and fences, so plenty of time must be allowed for this work. The screen, of course, presents the biggest problem and one of the most important. In most cases, one coat of paint will suffice, but a second may be required if it was neglected during the closing weeks of the previous season. The painting of the screen, which usually requires one full day with four men on

OPENING DAY AD tells the whole story complete with show billing and is larger than the rest. Free gifts, free popcorn, free passes to drivers, all to attract new patrons and encourage old ones to return.

the job, should be completed a week in advance of the actual opening date, so that it will be dry in time for any testing of the booth equipment deemed advisable.

The refreshment stand is another part of the theatre which requires particular consideration. The first step in readying it for operation is the unpacking and cleaning of all equipment, such as griddles, coffee urns, popcorn machines, etc., all of which are normally kept in the concession building throughout the winter. All exterior surfaces are generally coated with grease to protect against moisture, and this coating is removed. At least a week prior to reopening, this equipment should be thoroughly tested to make sure that it is in operating condition, and any trouble corrected well in advance of the actual opening date.

Simultaneously, the entire concession department is repainted, floors as well as counters and signs. In the meantime, the refreshment stand manager is engaged in contacting food suppliers and hiring personnel for the season. In the case of established drive-ins, these two operations are both fairly routine because staffing and foodstuff requirements may be readily calculated from experience gained in previous years.

Other physical problems which must be considered included: checking of all lavatory fixtures; ordering cleaning supplies; requisitioning tickets and a petty cash fund; ordering carbons, flashlights, boxoffice statements, and other operating necessities; making arrangements with the local bank for night deposits, money wrappers, and deposit slips; landscaping the area neatly; and contacting the local police to provide assistance and protection. A final overall cleaning should be undertaken just before opening night, so that the theatre will present an immaculate appearance.

Conclusion

Just as a dress rehearsal is held for a dramatic presentation before opening night, so a drive-in theatre should be given a "dry run" just prior to the season's official commencement. A careful inspection of the entire area and testing of the mechanical equipment will serve to assure the management that everything is in good working order.

In addition, employees may be given a trial on their respective duties, so that any errors or misunderstandings may be rectified immediately. Cashiers, for example, may be subjected to practice tests to determine their degree of proficiency. Finally, each member of the staff should be personally inspected to make sure that his or her uniform fits correctly, for the prestige which a drive-in is accorded by the public depends to a large extent upon the personal appearance of its personnel.

When everything is in readiness from the screen to the ramp boys' shoelaces, the drive-in may throw open its gates, confident in the knowledge that it is a theatre which the American family will be proud to honor with its patronage. An established tradition of the finest in outdoor entertainment year after year will make each reopening a festive occasion that will herald the advent of spring as much as the first leaves on the trees.

THE MAIN GATE with its boxoffice dominated entrance lanes should be made bright and aggressively modern. Particularly after dark, this is the last lighted area the entering patron will closely observe.

2. READYING PROJECTION AND SOUND EQUIPMENT

Introduction

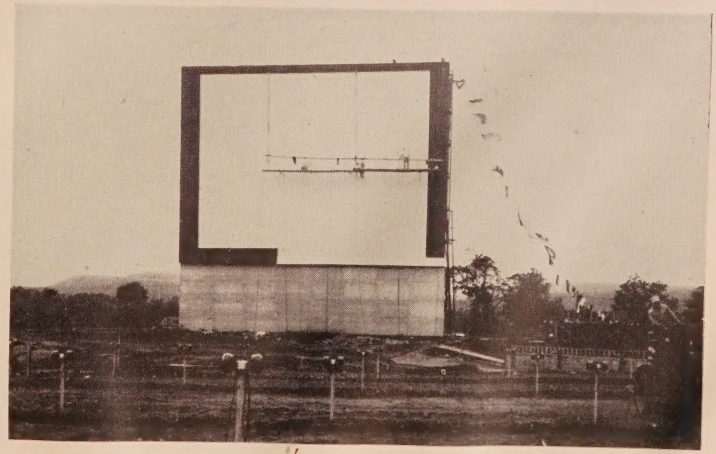
Much of the satisfactory performance of the drive-in theatre depends upon the degree of care exercised in preparing the sound and projection equipment before the reopening after the winter shutdown. Climate, severeness of the weather, construction and location of the booth, and the shutdown procedures employed are factors contributing to the deterioration affecting the system between seasons. Present-day costs and possible scarcity of replacements makes it imperative that maximum precautions be taken to guard against equipment failure both at the beginning or during the operating season.

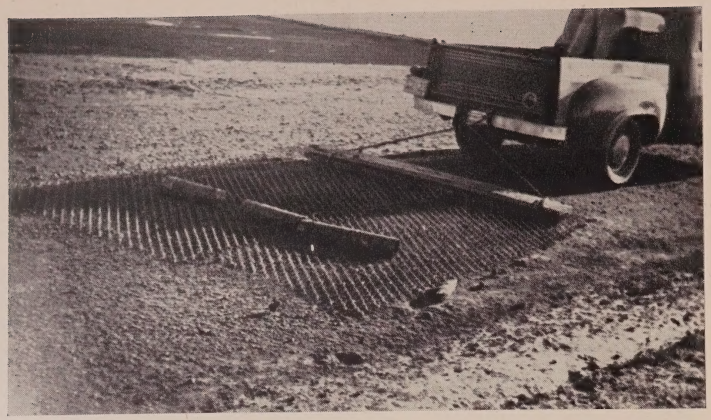
If the industry had been able to foresee the possibility of material shortages or restrictions and the curtailment of building in the amusement field at the time the drive-ins closed for the 1950 season, infinitely more care would probably have been taken on the whole by all exhibitors to protect their equipment during the shutdown period. Unfortunately, that was not the case, and, as a result, some of the equipments were not given the best of attention prior to shutdown.

This fact alone makes it more important than ever that the reopening of drive-ins should be carefully supervised by people thoroughly familiar with the equipment in order to prevent failures. Experience has proven that most dependable overall operation of an installation is obtained when equipment is installed, shut down, and reopened under the supervision and recommendations of an experienced service inspector.

Due to the number of types of equipment used and other factors mentioned above, only generalities can be considered here. It must be appreciated that, even under the most expert care,

PAINT UP and clean up is the order of the day. Now is the appropriate time to banish rust and weather stains from the face of the screen and the balance of the screen tower through several coats of paint.





ROLLING AND DRAGGING will fill and press down the frost expansion damage of the winter freezing and thawing. Pot holes that resist this should be cut out and patched with new foundation and surface.

the job of reconditioning the equipment preparatory for reopening requires coordinated planning. The drive-in exhibitor should guard against establishing a time schedule too short to give the proper attention to the necessary work which must be performed.

First of all, let us assume that reasonable care was exercised at the time the equipment was shut down for the season. If the precautionary steps were taken, the problem of reconditioning the drive-in equipment is relatively routine, and the equipment should be back in normal operating condition without too much trouble or expense. If, however, little or no attention was given to the equipment at the time of shutdown, considerably more work must be done, and much of the equipment will have to be completely overhauled; in some cases, it will have to be replaced.

Ventilation of Booth

The very first step is to see that the booth is unsealed and that proper heated ventilation is provided for a period of a week, if possible, before any equipment is turned on or allowed to rotate. The biggest factor contributing to the deterioration of the equipment is the effect of moisture during the shutdown period. That is why the problem of heat and ventilation is so important. This fact is almost universally overlooked by the outdoor exhibitor because of his impatience to get his drive-in operating. If he would only realize the value of this first step, he would be surprised at the dividends it pays.

Checking of Ramp Circuits

The recommended period for ventilating and drying out the booth does not necessarily have to be a period of inactivity. This time can be well used to check all of the ramp circuits for continuity. In new drive-ins, particularly, there no doubt has been some heaving, due to repeated thawing and freezing, which may have caused injury to the underground wiring. Surely, any necessary repairs to underground wiring should be attended to before driveway surfaces are fixed up.

All of the circuits from the ramp switching panels to the post outlets should be buzzed through and checked for high resistance, "grounds," or "opens." At the same time, the output connections at the posts can be thoroughly checked and cleaned. This job is a "must," regardless of the precautions taken, for these parts of the system have had the most exposure to the weather. Corrosion and contact resistance must be first removed and then dirt and foreign matter of any kind from the insulating materials to destroy any path that may be set up for electrical leakage.

Inspection of Speakers

During this same period all of the drive-in speaker units must be inspected to see that they are in first-class condition. A number of farsighted exhibitors have made arrangements during the shutdown period to return all of their speakers to either the manufacturer or a recognized repair service for thorough reconditioning. If this has been done, much time can be saved in preparing the equipment for reopening.

If, on the other hand, the speakers were merely covered up or removed and stored, detailed inspection is required. Some diaphragms will undoubtedly have to be replaced, as well as volume controls and damaged cases. Cords, terminals, and plugs will likewise require considerable attention and some replacement. Nests of rodents and insects must be destroyed and removed. In any event, it must definitely be determined that each and every speaker is in first-class operating condition.

In the case of central speaker systems, a very thorough job must be done to clean out the dirt and foreign matter that is bound to accumulate during these shutdown periods, and each unit must be carefully checked and reconditioned.

Refurbishing the Screen

The screen or screen surface should be carefully cleaned or refinished. A screen must be in first-class condition to maintain picture quality comparable to that of the previous season. Even though the color of the screen may at first appear satisfactory, it has doubtless lost considerable of its reflecting properties; therefore, refinishing is strongly recommended.

Projection Equipment

By the time all of the above tasks have been performed the booth has no doubt been thoroughly ventilated and dried out, so that actual work can be started on reconditioning of the projectors, lamp houses, and other equipment.

The projector, sound heads, and lamp houses, should have all of the rust preventatives removed. Although this is usually a very sloppy and undesirable job, it should be done thoroughly. Wherever possible, the projectors and sound heads should be completely immersed or, at least, well brushed out with a good grease dissolving agent. While kerosene is a good grease dissolvent and, at the same time, dries cleanly with a small oily film left deposited, it is, in most cases, illegal to use it in a projection booth. If carbon tetrachloride or some other chemical dissolving agent is used, the parts must be wiped with an oily rag after it has dried in order

OIL TREATING of the graded and packed surface is best accomplished now, for the penetration of preceding oilings should be at their maximum depth so that an additional coating will stay "high."

to remove the carbide deposit which remains.

Rust spots which remain on unpainted surfaces should be polished off with steel wool or crocus cloth and re-oiled. Where rust has started on finished surfaces, due to chipped paint, it should be thoroughly removed before a touch-up job is done. Painting over corroded surfaces does not stop the rust, for it continues to form and eventually causes the paint to peel.

All oil-bath gear boxes, intermittents, etc., should be drained, flushed, and refilled in accordance with the recommendations of the manufacturer. Similarly all grease-packed gear boxes should likewise be drained, flushed, and repacked with the proper grade of grease. Sound head scanners and/or flywheels should be thoroughly cleaned and relubricated. The projectionist should then go over and readjust the projector completely, as well as clean and check the projection lenses and the lamp houses. Motors, generators, exhaust fans, and other rotating equipment should also be cleaned and serviced under the supervision of competent motor maintenance men.

Sound Equipment

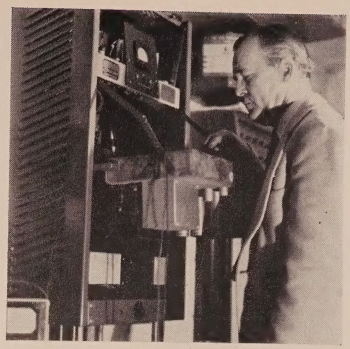
The sound equipment, due to its delicate nature, requires more than ordinary attention.

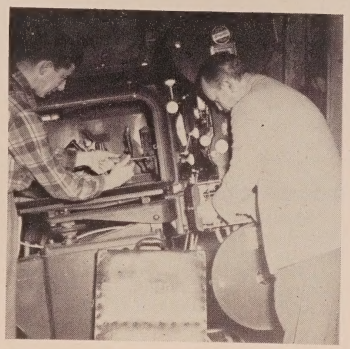
Starting at the film path, the optical system is checked for damage to lens and slit assemblies, mirror silvering, exciter lamps and lamp bracket assemblies, along with the condition of the photo-cell. Under extreme adverse winter conditions the optical components are often removed for storage in a more favorable location, but, in either case, a check on the accuracy of adjustments or readjustment must be made with specialized equipment described in detail below.

Continuing in the sound head, the scanner, sprockets, rollers, tension pads, etc., are inspected and adjustments reviewed and worn or defective parts are replaced. Sound head wiring must be examined for possible damage to insulation by oil—a very potent trouble source. Necessary repairs or replacement should be effected at that time.

Proceeding from the sound head to the pre-amplifier, volume controls and changeover devices are then checked. Tubes are removed for testing and contact cleaning. Amplifier chassis are best cleaned by air blast, heated if possible. closely adjacent contacts, such as those at tube sockets, must be examined for possible short-circuit paths. Volume controls are cleaned, and a special lubricant applied. Changeover switch contacts are burnished and checked for "follow" in operation.

Advancing to the voltage and power amplifiers, tubes are also tested and visual examination made for poor connections and unwanted leakage paths. In the case of the power amplifiers, operating voltages approaching 2,000 volts are often present at various points in the circuit. Transformers and condensers in these high-voltage circuits are necessarily large and expensive. It is extremely important that the amplifiers are not turned on until the service inspector, using his test equipment and technical knowledge, has determined that no leakage path that might damage components exists.





YOUR SERVICE CONTRACT will take care of all projection and sound equipment. Above, Altec inspector making adjustments in amplifier, and examining sound head while projectionist adjusts lamp. Below, the projectionist cleans and services the motor generator, and inspector McLean checks the junction boxes and the speakers for flaws or loose connections.

Exciter power supplies are examined in a manner similar to that used for the amplifiers. After the system is turned on, any emergency section of the supplies is adjusted so as to provide exciter filament voltages equal to that of the regular supply.

The next checking point will normally be the ramp control panel, wherein switches must be burnished and adjusted for proper pressure. Normally, it is desirable to replace all fuses in the power circuits, since deterioration, resulting in lowered carrying capacity, can occur under damp conditions. The various line voltages, under load, should be checked and adjusted to assure that power service is normal. Should line voltage conditions be abnormal the local power company should be consulted.

While the foregoing is in progress, it is usually economical to have the previously tested in-car speakers reconnected.

The system is then turned on and allowed to warm up thoroughly while preparation is made for the transmission test. Included in the requirements for this test will be a calibrated multi-frequency film, lens loop, buzz-track, flutter film, a volume-indicating meter, and a decabridge. If results of the test indicate a need for readjustments or other investigation, an audio-oscillator, flutter bridge, ohmmeter, and/or voltmeter might be required.

The transmission test is an all-embrasive method, positive but requiring a minimum of time, which provides a check on the optical system settings and performance of the tubes and amplifiers to assure that amplifier and speaker connections are arranged for the best possible volume and quality at each speaker. The inspector has only to refer to the previous transmission test report or the manufacturer's recommendations to evaluate quickly the overall condition and determine what corrections are required to overcome system component deterioration or changes in the recording art.

Once the system response is satisfactory, a regular sound reel or the SMPTE ASTR-4 reel should be run to allow checking on operation of all in—car speakers and to permit the projectionists to re-familiarize themselves with the system controls and settings.

Conclusion

It is essential that the importance of the foregoing recommendations to satisfactory operation of the equipment be recognized by the drive-in exhibitor when he is reopening his theatre. The time required will be repaid many times in reduced operating troubles and savings in costly repairs and equipment replacement.

During the operating season, routine servicing, coupled with emergency service as required, has proven its worth through hundreds of thousands of hours of operation, in hundreds of drive-in theatres. Under present economic conditions, made more acute by impending material shortages, it is sheer folly on the part of the outdoor theatre operator to be guilty of negligence in this regard.

Proper Handling of Theatre Supplies

An Efficient System for Ordering, Storing, and Issuing Housekeeping Items Is Explained Herein

BRIEF: *No theatre housekeeping program . . . which purports to accomplish the desired results in cleanliness . . . can be set up in a haphazard fashion . . . The supplies . . . so vital in the correct and thorough performance of the necessary chores . . . must be handled in accordance with a system that will assure maximum efficiency in their usage.*

Described here is a supply system . . . conceived and put into practice by an executive of a leading circuit . . . which offers practical solutions to such problems as: storage . . . . ordering . . . . and inventory . . . The methods outlined here will . . . in all probability . . . be helpful to other theatremen with supply problems.

A good housekeeping program, obviously essential in the proper maintenance of any theatre, depends largely for its success on the correct handling of required supplies. As a matter of fact, an efficient system for ordering, arranging, issuing, and supervising the use of supplies is absolutely necessary, if maximum service is to be obtained from them and extravagant waste avoided.

Fully alive to the importance of sound methods in ordering, storing, dispensing, and using theatre supplies, John D. Conner, City Manager of the Pulaski and Dalton (two Neighborhood Theatre, Inc., houses in Pulaski, Va.), has developed a system for this purpose which appears to fulfill all of the goals to be desired in simplicity and efficiency of operation.

Centralization of Items

Under the Conner system, supplies for both theatres are kept in the supply room at the Dalton, a 919-seat house originally built in 1921; the Pulaski has a seating capacity of 845 and was first constructed in 1910. It has been found that great economies have been effected by combining supplies for the two houses in one supply room and issuing them as needed because there is little danger of the over-buying or waste that often result from dispersal of supply sources.

Purchase Order System

When supplies are to be ordered, a purchase order system devised by Conner is said to result in a notable saving of time, effort, and money. Each purchase order sheet is clearly dated and the name of the vendor, which must be a reputable firm that will deliver the desired goods at the lowest possible prices and best discounts, stated exactly at the top. The quantities requested are marked opposite each item, which is described fully with complete specifications, the net unit price, and the total cost. The theatre's name, location, and signature of the city manager must be on each order.

THE SUPPLY POOL from which both the Pulaski and Dalton Theatres draw their needs is located in the Dalton. Neatly shelved and stocked, all supplies are kept properly grouped in relation to their theatre use, and are visible for a spot check at any time. Cleanliness and orderliness are important not only to the future usefulness of the supplies themselves but to the efficiency of flawless inventory control. Theatres at distances from normal supply stores will find that there are both savings and good management in such supply stock rooms, at times of either real or enforced scarcities.

10 WATT INTERMEDIATE BASE - CLEAR

Date of Beginning Inventory and Bulbs Received	Inventory and Shipments Received	Balance On Hand	Bulbs Taken Out For Use		
			Pulaski	Dalton	Other
1/15/49	240	240			
2/5/49		228	12		
3/2/49		222		6	
4/8/49	Recd 144	366			
5/10/49		354	12		
6/28/49		348		6	

A TYPICAL PAGE from the Pulaski and Dalton Theatres light bulb inventory book is here illustrated. A separate page is used for each different type and wattage of bulb, giving a complete record of the number on hand or newly purchased, plus the periodic draw offs by a particular theatre. Dated entries are made each time the bulbs are received or issued, together with the resultant new total, thereby providing an accurate running inventory.

Purchase orders are made out in quadruplicate by Conner, and all copies are sent to the home office in Richmond, Va., for approval. If the prices, quality requirements, and other conditions are met satisfactorily, the home office approves the order, mails the original copy to the vendor, retains one, and returns the theatre copy and the receipt to the originator to indicate that the order has been placed and that the arrival of the supplies can be expected in a reasonable time.

If the purchase order is not approved, it is returned to the theatre marked "Disapproved," and the home office then proceeds to forward to the house in question the receipt and theatre copies of an entirely new and approved purchase order to indicate that it has been placed with appropriate changes made.

Once the shipment has been received by the theatre, a thorough check is made for any shortages or damages that may have occurred in shipment. On the receipt copy are noted the date and the condition of the supplies on arrival, and it is returned to the home office with the city manager's signature affixed to indicate that the invoice is ready for payment.

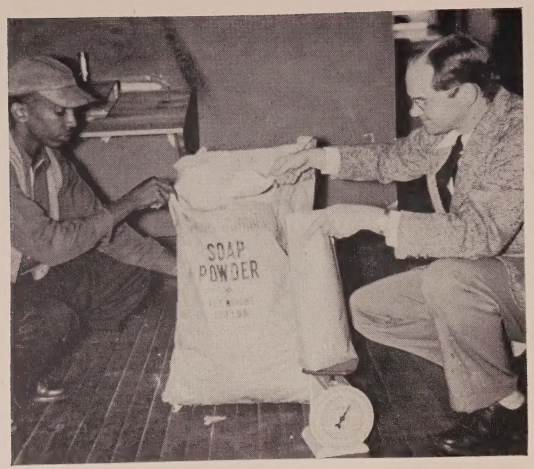
Storage and Inventory

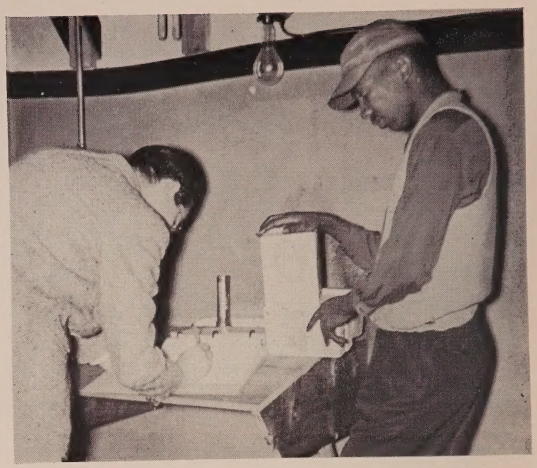
After the supplies have been checked, they are systematically arranged in their proper places on the shelves and entered on inventory sheets for issuance as needed. These perpetual records are particularly valuable as far as light bulbs are concerned because they enable the management to tell at a glance just how many of a certain type of bulb are on hand. Furthermore, the dates on the records indicate the exact number of bulbs used over a given period of time; it is, therefore, possible to determine whether or not the expected use life is being obtained from the bulbs and whether the power supply is constant. Great care is exercised at the time of purchase to make sure that the bulbs have the correct voltage.

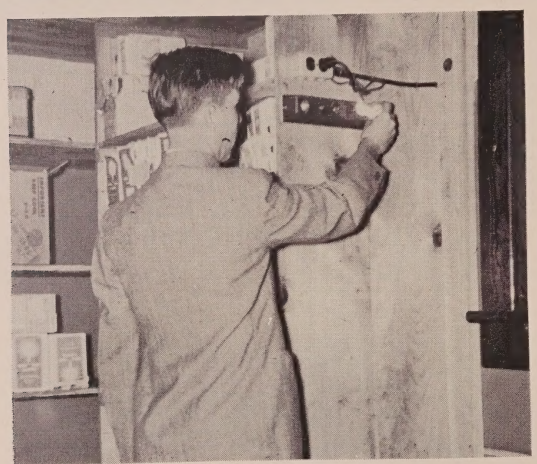
A perpetual inventory system is also kept on brooms, and the porters must turn in an old one before another is issued. According to Conner, this practice has cut the number of brooms previously used approximately in half. Similar savings have been effected in the case of cleaning rags and cotton mop heads, for janitors are required to wash and hang them up to dry after each day's use, so that maximum wear will be derived from them before replacements are issued.

Although a closer check is kept on light bulbs and brooms, a list is made, nonetheless, to show the dates of issuance, quantities, and the recipients of other supplies, such as hand soap, soap powder, brass polish, deodorant blocks, toilet tissues, paper towels, etc. If it appears that unduly large amounts of the foregoing items are being consumed during a given period, checks for possible waste may be easily made.

A PLACE FOR EVERYTHING and everything in its place, is the fundamental approach to any system of filing or stock control. Here is the section of shelves devoted to paper towels, toilet tissue, bowl cleaner, window cleaner and other supplies of a similar cleaning and sanitation nature. All are neatly arranged.







TYPICAL OPERATIONAL METHODS that maintain efficiency and get the maximum value from the Pulaski and Dalton Theatres stock pool are here illustrated. Top, left: Soap powder is issued to porters in small quantities in order to avoid waste through carelessness or too generous use. Top, right: As new light bulbs are issued, an immediate entry in the perpetual inventory record will avoid later shortages or out-of-stock situations. Center, left: Every light bulb is tested before being put into stock, and again before being issued. Center, right: From convenient wall racks, new brooms are issued only upon the return of the old, used one. Bottom, left: Cleaning rags are stored in a steel drum after the bale is broken, in order to avoid fire hazard of any nature. Bottom, right: Approximately 6,000 new bulbs, or three replacements for each of the 2,000 sockets in the two theatres, are always carried in stock and neatly stored. Coupled to such routines is the respect of all personnel for the objectives of systematic stock piling.

Effective Pest Control in Theatres

The Various Kinds of Troublemakers Are Discussed With Appropriate Remedial Treatments Prescribed

By Jacques J. Hess
Vice-President, Exterminating Services Corporation

There is probably no other single factor in theatre operation as destructive to prestige, reputation, and goodwill as the presence of "buggy seats," vermin-infested rest rooms, and rats or mice that roam the aisles. The movie-going public, while more tolerant in the days of the nickelodeon, today rightfully expects to enjoy a show in surroundings that are entirely free of pests. It has been proven time and time again that any theatre which rashly permits the existence of such unsanitary conditions suffers a severe loss at the boxoffice.

Due to the very nature of their structure, theatres always have been, and always will be, desirable homesites for a large variety of filthy, uninvited "guests." Nearly always in semi-darkness, heated in winter, and comfortable in summer, the average house offers innumerable nesting areas for disagreeable pests that violate all rules of sanitation and inflict damage running into thousands of dollars on equipment and furnishings. In view of the heavy financial losses from pest depredations, it is imperative that theatre operators be acquainted with measures to prevent their appearance, be able to recognize signs of their presence, and know how to combat them successfully.

TYPES AND THEIR CONTROL

According to the U. S. Department of Agriculture, there are over 600,000 different species of insects, plus many varieties of rodents, which prey on man, destroy stored foods, and sometimes carry deadly diseases. Not all of these types, of course, plague the theatre, but a sufficient number of them crop up in places of amusement to cause plenty of trouble. Among the varieties of pests which are most often encountered in theatres are the following: rats and mice; bedbugs, fleas, ticks, and lice; cockroaches, moths, and carpet beetles; termites, flies, and mosquitoes.

Both migratory and flying pests enter the theatre through exit doors, pipe openings, and other types of convenient access; vermin and insects are often carried in by patrons; and merchandise containers, such as candy cases, offer another popular means of entry.

Rodents

Since few structures offer more comfortable living quarters for rats and mice than theatres, they occur more frequently than any other type of pest in motion picture houses. Although theatres which are located near food stores, meat, fruit, and vegetable markets, and restaurants are usually particularly subject to rodent infestation, these troublesome creatures will invade any house where food and water are obtainable and convenient harborage available.

One of the finest homesites for rodents are the tunnels under the floors of many theatres. Electrical, telephone, heating, and water pipe lines often found here are extremely liable to be infested with these pests. Food is frequently delivered to these subterranean marauders through return, unscreened air vents when floors are swept.

Rodents may be kept out of or exterminated in underfloor lairs by periodic cleaning of all pipe lines, tunnels, ducts, and utility lines, and by regular inspections of boiler rooms, storerooms, and all portions of the basement. Any worthless refuse should be immediately discarded, for it not only provides excellent rodent harborage, but constitutes a dangerous fire hazard as well.

Inasmuch as drinking water and food are as essential to rodent as they are to human life, all sources of supply should be effectively blocked off. In the first connection, all leaking faucets and pipe lines should be repaired, for a thirsty rodent cannot survive indefinitely with its water supply cut off completely.

Secondly, every possible step should be taken to eliminate food by: furnishing covered receptacles for its disposal; thorough vacuum cleaning under radiators, seats, in corners, and other places where food scraps may lodge; tightly enclosing refreshment stand stockrooms with snug fitting doors and windows; elevating reserve foodstuffs on platforms at least eight inches above the floor; and inspecting merchandise cartons for any possible rat or mouse lairs.

Other rodent-proofing measures include sealing off all possible points of entry around foundation walls, pipes, doors that are not flush with the saddles or floor surfaces, broken windows, etc., with a good cement mix, plaster of paris, sheet tin, or wire mesh, and a thorough periodic cleaning of the entire theatre premises to do away with all refuse on which rodents thrive.

As a final note of caution, the theatre operator should avoid control measures involving the use of dangerous toxic poisons which only a professional expert should handle. For example, there recently has been considerable propaganda to the effect that discharges of ozone will repel rodent life, but it has been proved by reliable authorities that its use may be hazardous to health.

BRIEF: ***Clean and healthful . . . as well as attractive . . . surroundings are essential requisites for any theatre which purports to be modern in the true sense of the word . . . Few patrons will ever return to a house where they have noted unsanitary conditions . . . especially those which give rise to pests of any description . . . and will not hesitate to voice their disgust to their friends . . . One rodent or insect can drive away a dozen customers . . . to say nothing of the damage inflicted on theatre property by such marauders.***

Prevention through good housekeeping . . . particularly around sources of food . . . is the first step in combatting the pest problem . . . but the theatre operator must also know what measures to take when destructive invaders have already gained a foothold in his house . . . The following article points out the types of pests most likely to harass theatres . . . suitable means of dealing with them . . . and the invaluable assistance which the professional exterminator can offer in preventing and destroying infestations.

Insects and Vermin

The presence of these pests also offers a formidable challenge to sanitary theatre operation, so they must be dealt with as severely as rodents. No respecters of people or places, insects and vermin are as likely to invade the largest and finest theatres as they are smaller houses. As a matter of fact, seats in theatres with continuous shows that are occupied five times or more per day are quite liable to have more pests than those in houses with a smaller audience turnover.

Bedbugs and Lice—Since the reddish-brown, oval-shaped bedbug likes to hide in cracks and crevices and flourishes near sources of human blood, theatre seats are made to order for this type of pest, frequently found in arm rests, backs, and crevices between the upholstery and the seat bottom. Lapped-over corners of the fabric, metal hat racks, and seat vent openings may also secrete bedbugs.

White egg deposits, brown excreta, and characteristic odor are telltale signs of bedbug breeding grounds. In addition to seats, loge divans, upholstered lobby furniture, and rest rooms are also favorite roosting places.

Immediate and thorough measures should be instituted to control bedbugs. Treatment by a professional exterminator is recommended, but, if a theatre operator is bent upon doing his own work, he should use a good mechanical sprayer and one of the standard brand insecticides. Seats should be treated after the last show at night, or not less than five hours before the next day's first performance, with a practically odorless, quick-drying, non-staining chemical solution. Spraying with any unproven liquid containing an acid or other chemical irritant may turn out to be more dis-

Typical insect pests: Flea, Bedbug, Clothes Moth, Carpet Beetle, and Cockroach. The relative sizes to which each grows is given in the line scale under each.

A SKILLED PROFESSIONAL EXTERMINATOR sprays a seat lip (above) and under the arm (below) to destroy pests. He uses a pressure sprayer which ejects a powerful insecticide from the nozzle.

astrous than the insect itself. The writer recalls a foolish theatre operator who was faced with over 300 lawsuits entered by patrons afflicted with burns of the arms and legs from wet seats sprayed with an inferior compound only a short time before the first show.

Body lice, although they are not so generally encountered nowadays, still constitute a menace in some sections of the United States and should be guarded against. Often carriers of disease, they should be stamped out by the same methods used to destroy other pests of similar habits.

Cockroaches—A well-known pest and a constant visitor to theatres, the cockroach family also includes waterbugs, croton bugs, and beetles. The most common domestic type, the German cockroach, invades theatre restrooms, seats, furniture, drinking fountains, dish premium and candy cartons, refreshment stands, and vending machines. The largest of the species, the American cockroach, frequents portions of the basement, such as the boiler room, coal bin, sump pit, refrigeration machinery sites, and other damp surfaces. Other types, such as the Australian or brown-banded cockroach, may be present in various sections of the country.

Cockroaches of any kind can become very troublesome, and vigorous measures must be taken to control them. Standard liquids or powdered insecticides of the newer residual type will prove extremely effective when properly applied to spots where roaches appear. Treatment may have to be repeated at regular intervals to insure lasting control.

Fleas and Ticks — These vociferous pests enter the theatre through open exit doors, broken windows, coal chutes, etc., or they are carried in by dogs, cats, and rodents. Once established in the pleasant atmosphere of a dark, warm theatre, eggs dropped by fleas and ticks fall to the floor, and the larvae feed on any material found under the carpets and matting, or in the floor and seat cracks. When full-grown, they will attack any convenient patron.

Control of fleas and ticks is best effected by rodent eradication, removal of cats and dogs, and the complete vacuum cleaning of carpets and upholstered furniture. Chemical treatment with a good insecticide, or the dusting of affected areas with naphthalene flakes or paradichlorobenzine crystals, is also helpful.

Moths, Flies, and Mosquitoes — Since the re-weaving of unsightly moth holes in carpeting can be expensive, a careful

lookout should be maintained for damage caused by fabric moths, carpet, and/or buffalo beetles in corners or under heavy pieces of furniture infrequently moved for cleaning purposes. Moth flakes or effective insecticides may be used to combat these destructive nuisances.

Fly and mosquito control involves the elimination of breeding areas, such as decaying fruit or vegetable matter, garbage, nearby manure piles or stables, swamp land, and stagnant water. A standard kerosene-base oil insecticide applied to the infested areas will usually prove effective.

Termites — These wicked little destroyers which resemble ants, although they are not related to them, also may infest theatre structures. Both the subterranean and dry-wood types are capable of inflicting extensive damage to supporting wood members, base boards, floors, and floor surfaces.

The correction of termite infestation is essentially a problem for the professional exterminator, since effective control may require excavation and chemical treatment of the soil fill under floors, replacement of damaged beams or girders, and other construction alterations.

Although, as we have seen, the theatre operator may institute a fair program of pest control on his own initiative, a more efficient job can be done by a competent exterminating firm which has the experience and the equipment to meet any type of pest problem. In reality, the extermination of rodents, insects, and vermin is a science, and as such should be handled by technicians who have been extensively trained for this work rather than by amateurs.

A professional exterminator employed by a theatre inspects all parts of the house once or twice a month, notes any signs of pest trouble, and treats the affected areas by the most modern and efficient methods. Reputable exterminators are licensed by authorities who realize that certain rodentcides and insecticides are safe only in the hands of trained personnel. In the final analysis, a porter or manager is not a good substitute for a skilled exterminator.

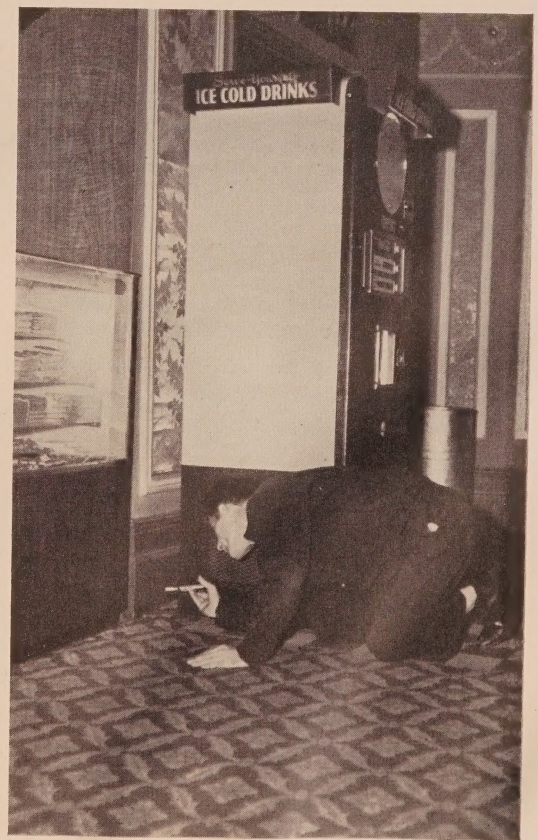
The cost of a professional pest control service is surprisingly moderate and oftentimes cheaper than "home-made" attempts. A contract to service a theatre by the year is the recognized practice, and charges run, broadly speaking, from $7 up per month with the average house in the range under $20. Since operations include not only the correction of unsanitary conditions which have already arisen, but also the prevention of any other developments, the cost is quite nominal for the protection afforded.

Any theatre operator who considers engaging an exterminating concern would do well to consult at least two concerns and weigh the offers of each carefully before making a decision. The organization which he chooses should have a good reputation for satisfactory performance and fair business dealings, be factual and dignified in its advertising, and be pledged to maintain sound technical and business standards.

A firm selected on the basis of performance and responsibility is likely to be a member of a local, state, or the National Pest Control Association. As such, it has access to authentic information and modern scientific methods and is sworn to maintain high standards of service.

Any questions on pest control problems may be forwarded to the NPCA in care of THEATRE CATALOG or addressed directly to the organization's headquarters at 30 Church St., New York 7, N. Y.

RAT AND MOUSE TRACKS ARE OBJECTS OF SEARCH by an exterminator (left) in a pipe tunnel under an auditorium floor. Refuse dropped through air vents is a natural attraction for rodents. RIGHT: An operator inspects insects and rodents behind a candy counter and drink vending machine.



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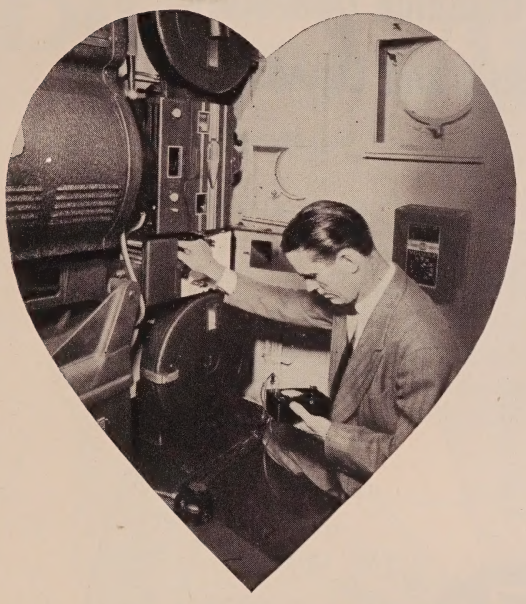

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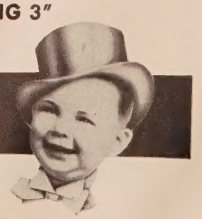

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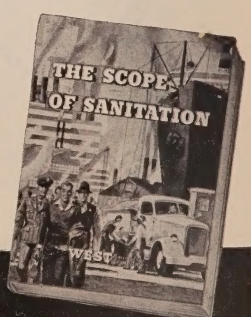

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Bowling Alley Operation with Theatres

How a Mutually Profitable Alliance May Be Formed Between Two Enterprises Which Support One Another

By NAT N. WEXLER
The Brunswick-Balke-Collender Company

BRIEF: *There is . . . of course . . . a world of difference between heaving a ball down a bowling alley . . . and comfortably settling in a theatre chair to watch a moving picture . . . One would have cause to wonder . . . therefore . . . how two such distinctive forms of recreation could be operated together . . . but they can be easily combined . . . and profitably, too . . . As a matter of fact, they form a natural partnership . . . with each helping to support the other nicely . . . The alliance also paves the way for other sources of revenue . . . such as cocktail lounges and locker rooms.*

The following article . . . written by a representative of an outstanding bowling equipment manufacturer . . . describes in detail how bowling alleys and theatres may be jointly operated for mutual benefit . . . Discussed are such important matters as: attendance potential factor . . . other sources of revenue . . . measuring bowling alley draw . . . number of alleys . . . space requirements . . . construction costs . . . overhead costs, etc. . . . Two typical bowling alley-theatre installations are also analysed.

Bowling in the United States today is big business in the fullest sense of the phrase, for the nation's 20 million bowlers spend over $250,000,000 a year on fees and playing equipment. In short, bowling establishments, with their tremendous flow of traffic for both league and open (non-league) play, play an important role in, and become an integral part of, the recreational and social life of a neighborhood or community.

From a promotional point of view, bowling receives powerful backing from several major national organizations: The American Bowling Congress, The National Bowling Council, The Women's International Bowling Congress, and The American Junior Bowling Congress. These organizations devote their entire promotional efforts and full energies toward creating more bowlers and building a better foundation for bowling. Their constant and continuing efforts in these directions have been primarily responsible for making bowling a major recreational activity on the American scene.

BOWLING AND THE THEATRE

Due to their pulling power as a traffic builder, theatre operators seeking a profitable adjunct to their financial sales picture would do well to consider seriously the installation of bowling lanes as a potential profit partner. The mutual benefits derived from an alliance of this nature are innumerable and support each other from every point of view.

Attendance Potential Factor

There are numerous reasons why bowling alleys in conjunction with theatres lead to many profit-producing ramifications. Among the most important is the ability of the former to draw all types of people who become potential theatre patrons to an even greater degree because of their interest in bowling.

For example, in addition to the men, women, and children who constitute the actual bowlers at all times of the day and night, there is always on hand a good crowd of spectators who come to watch league games, tournaments, instruction clinics, or exhibitions. Many of the men and women bowling have families and friends who may elect to watch them bowl—or they may decide to pass their time in the theatre. One operator of a joint theatre-bowling alley project states that many wives attend the theatre while their husbands participate in their bowling league matches, and couples bowling together often leave their children in the movies while they are engaged in the sport; the price of theatre tickets is considerably less than they would have to pay for a "baby sitter" to watch the youngsters at home.

Furthermore, an alliance between bowling lanes and theatres often serves to attract groups of couples, particularly when they are unable to find something to do which will appeal to all members of the group. In such cases, the couples who have seen the current film often go bowling, while those who have not attend the theatre. They meet afterwards in the cocktail lounge of the bowling establishment or at the snack-bar — other avenues of extra profits which will be discussed further below. Thus, it is obvious that by offering other attractions besides movies a theatre operater may well draw business that he might not have otherwise.

Other Sources of Revenue

A bowling establishment adjoining a theatre opens the gate to many additional sources of income above and beyond that derived from the lanes themselves. Since bowling is a vigorous exercise, the desire for refreshments is strongly stimulated, and, of course, those who have accompanied the bowlers to the establishment will undoubtedly join them in partaking of food and drink.

Thus, the operator may profitably install a refreshment stand in the bowl-

FIG. 1—8-lane alley (multiple enterprise project).

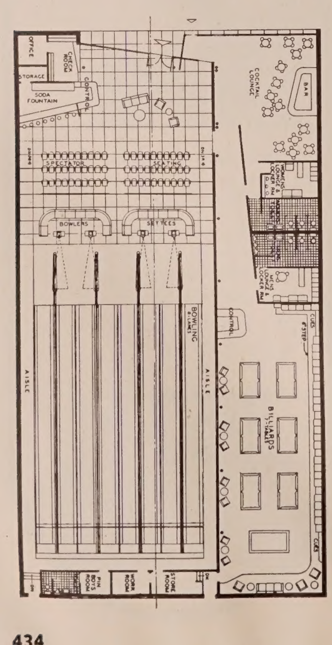
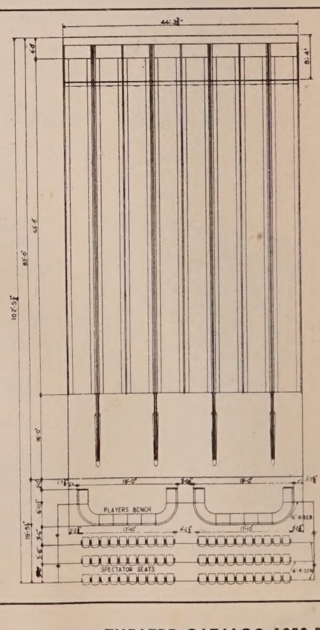


FIG. 2—8-lane alley with center ball returns.



ing area, and a cocktail lounge, luncheonette, or de luxe snack bar nearby, thereby capitalizing on the natural desire for something to eat or drink which usually always accompanies indulgence in recreational activities. The average bowler or spectator will, 99 times out of 100, patronize an adjoining eating place or bar rather than put on his hat and coat to go elsewhere.

Next, many proprietors of bowling establishments have found that billiard tables provide a rich additional source of revenue. Easily run in conjunction with the alleys under the same management and with very little extra upkeep, this secondary operation can be an extremely profitable sideline.

Still other obvious sources of extra income are such expedients as the sale of bowling equipment or the rental of shoes for the purpose, and the installation of vending machines for cigarettes, candy, soft drinks, etc. In short, bowling lanes adjoining theatres offer means of additional revenue which the latter by themselves would have considerably less success in tapping.

Fig. 1. shows a design plan for combining bowling and billiards with refreshment facilities in what is a popular and profitable type of multiple enterprise. This design shows how skillful organization of space results in efficient operation. The section of the plan devoted to bowling shows the lounge area, with soda fountain, control counter, check room, and office, immediately adjacent to the entrance.

Toilet facilities for both men and women, locker lounges. and powder room are all centrally located with easy access from the bowling or billiard room and the cocktail lounge. The billiard room is elevated and separated from the bowling lanes by a 1′ 6″ change in level. Note the transparent glass wall which prevents transmission of sound, but does not interfere with vision between bowling and billiard sections of the installation.

Measuring Bowling Alley Draw

There are no set yardsticks by which the theatre operator can definitely estimate bowling alley attendance potential because the so-called thousands of population required to sustain a bowling establishment vary completely in different sections of the country. In some localities, the people are enthusiastic bowlers and will devote a major portion of their leisure time to bowling. Other areas need a greater population to support a bowling enterprise.

Since every case is an individual matter, the theatre operator contemplating a bowling alley installation is strongly advised to consult the Brunswick representative in his area for expert opinion and guidance. Before recommending the installation of any such establishment, the latter will make a thorough study of the existing conditions, location, population, number of factory, church, afternoon, and junior bowling leagues, etc., that would be available to the prospective bowling alley proprietor. In every instance, the situation is "case-handled," and an installation is never advised unless this preliminary investigation shows that it would have a good chance of success.

Table I—Analysis of Income and Expense for a Typical 6-Lane Establishment

Summary

	Gross Income	*Total Expenses*	*Profit Before Federal Income Taxes*
Bowling	$27,702.50	$21,723.88	$5,978 62
Miscellaneous	316.05	—	316.05
Total →	$28,018.55	$21,723.88	$6,294.67

Breakdown of Income

BOWLING			
League Season			
League Play	30 lines per day x 6 lanes x 5 days x 35 weeks = 31,500 lines @ 35c	$11,025.00	
Open Play Weekdays	15 lines per day x 6 lanes x 5 days x 35 weeks = 15,750 lines @ 35c	5,512.50	
Open Play Weekends	50 lines per day x 6 lanes x 2 days x 35 weekends = 21,000 lines @ 35c	7,350.00	
Summer Season			
Open Play	20 lines per day x 6 lanes x 7 days x 8 weeks = 6,720 lines @ 35c	2,352.00	
Other			
Shoe Rentals	43,470 lines of open play. Average 3 lines per bowler — 14,490 bowlers. Rentals on basis of 50% — 7,245 @ 15c	1,086.75	
Ball, Bag and Shoe Sales	Sales at gross average of $5 per day for 301 days — $1,505 — profit 25%	376.25	
	Total Bowling Income		→ $27,702.50
MISCELLANEOUS			
	Candy, Cigarettes and Soft Drinks $7 per day for 301 days @ 15% profit	316.05	
	Total Miscellaneous		→ 316.05

Breakdown of Expenses

BOWLING	
Rent (a)	$ 3,240.00
Pin Boys' Salaries @ 10c per line	7,497.00
Manager's Salary (Owner) $3,600 per year	3,600.00
Maintenance Man (Porter) $1,200 per year	1,200.00
Maintenance, Supplies and Resurfacing	1,500.00
Advertising and Promotion	500.00
Social Security	467.88
Federal and City License (b)	150.00
Personal Property Tax	315.00
Insurance (c)	504.00
Utilities (Heat, Light, etc.)	900.00
Outside Fees (Bookkeeping, etc.)	600.00
Depreciation on Equipment (d)	1,050.00
Incidentals	200.00
Total Bowling Expenses →	$21,723.88
Total Miscellaneous Expenses (not itemized)	—

(a) Rent paid if premises are leased; or, if building is owned, it includes depreciation, real estate taxes, interest on mortgage, insurance on building, maintenance expense. Rent is distributed on basis of approximate space occupied by each operation.

(b) Federal license @ $20.00 per lane; City license @ $5.00 per lane.

(c) Complete insurance coverage—fire, burglary, workmen's compensation, public liability, use and occupancy, etc.

(d) Depreciation figured at 5% on bowling equipment.

Table II—Analysis of Income and Expense for a Typical 12-Lane Establishment with 8 Billiard Tables and Cocktail Lounge

Summary

	Gross Income	*Total Expenses*	*Profit Before Federal Income Taxes*
Bowling	$ 64,752.50	$ 48,205.20	$16,547.30
Billiards	14,000.00	9,242.80	4,757.20
Miscellaneous	61,173.00	47,845.00	13,328.00
Total →	139,925.50	$105,293.00	$34,632.50

Breakdown of Income

BOWLING			
League Season			
League Play	30 lines per day x 12 lanes x 5 days x 33 weeks = 59,400 lines @ 35c	$20,790.00	
Open Play Weekdays	20 lines per day x 12 lanes x 5 days x 33 weeks = 39,600 lines @ 35c	13,860.00	
Open Play Weekends	50 lines per day x 12 lanes x 2 days x 33 weekends = 39,600 lines @ 35c	13,860.00	
Summer Season			
Open Play	25 lines per day x 12 lanes x 7 days x 17 weeks = 35,700 lines @ 35c	12,495.00	
Other			
Shoe Rentals	114,900 lines of open play. Average 3 lines per bowler—38,300 bowlers. Rentals on basis of 50%—19,150 @ 15c	2,872.50	
Ball, Bag and Shoe Sales	Sales at gross average of $10 per day for 350 days—$3,500—profit 25%	875.00	
	Total Bowling Income →		$ 64,752.50
BILLIARDS			
	8 tables @ average gross income of $5 per table per day x 350 days	14,000.00	
	Total Billiard Income →		14,000.00
MISCELLANEOUS			
Food and Beverage	75% of combined bowling and billiard income	59,064.00	
Candy, Cigarettes and Soft Drinks	$10 per day for 350 days @ 15% profit	525.00	
Check Rooms	19,800 league bowlers in 33 weeks 80% checking @ 10c	1,584.00	
	Total Miscellaneous →		61,173.00

Breakdown of Expenses

	Bowling	*Billiards*	*Misc.*	*Total*
Rent (a)	$ 6,480.00	$1,440.00	$ 2,200.00	$ 10,120.00
Pin Boys' Salaries @ 10c per line	17,430.00	—	—	17,430.00
Manager's Salary ($7,200 per year)	3,600.00	1,800.00	1,800.00	7,200.00
Asst. Manager's Salary ($3,600 per year)	2,400.00	1,200.00	—	3,600.00
Counter Man ($3,000 per year)	2,000.00	1,000.00	—	3,000.00
Maintenance Man ($3,000 per year)	2,000.00	1,000.00	—	3,000.00
Bartenders (2 @ $3,500 per year)	—	—	7,000.00	7,000.00
Waitresses (2 @ $1,200 per year)	—	—	2,400.00	2,400.00
Porter ($1,800 per year)	1,200.00	300.00	300.00	1,800.00
Maintenance, Supplies and Resurfacing	3,000.00	400.00	—	3,400.00
Advertising and Promotion	600.00	200.00	200.00	1,000.00
Social Security @ 4%	1,045.20	162.00	378.00	1,585.20
Federal and City License (b)	300.00	200.00	1,000.00	1,500.00
Personal Property Tax	750.00	108.00	225.00	1,083.00
Insurance (c)	1,200.00	172.80	360.00	1,732.80
Utilities (Heat, Light, etc.)	1,500.00	350.00	400.00	2,250.00
Outside Fees (Bookkeeping, etc.)	1,000.00	250.00	250.00	1,500.00
Depreciation on Equipment (d)	2,500.00	360.00	1,500.00	4,360.00
Incidentals	1,200.00	300.00	300.00	1,800.00
Cost of Food and Beverages	—	—	29,532.00	29,532.00
	$48,205.20	$9,242.80	$47,845.00	$105,293.00

(a) Rent paid if premises are leased; or, if building is owned, it includes depreciation, real estate taxes, interest on mortgage, insurance on building, maintenance expense. Rent is distributed on basis of approximate space occupied by each operation.

(b) Federal license @ $ 20 per lane and table;
City license @ $ 5 per lane and table;
Liquor license @ $1,000 per year

(c) Complete insurance coverage—fire, burglary, workmen's compensation, public liability, use and occupancy, etc.

(d) Depreciation figured at 5% on bowling and billiard equipment, 10% on lounge equipment.

Number of Alleys

The number of lanes which a prospective bowling alley proprietor should install to accommodate an estimated attendance is another question which cannot be answered conclusively because of the many variable factors involved in every case.

As a general rule, the greatest portion of present-day bowling is done on a league basis; that is, leagues are scheduled throughout the entire bowling season, and arrangements are made in advance for their use of the lanes. Thus, the operator usually has a full complement on his lanes throughout the week. Saturday and Sunday, in many locations, are devoted to open bowling.

Here again, then, the number of alleys which may be profitably installed can best be determined by calling in the local Brunswick representative who will be able to break down, for the theatre operator contemplating entry into the bowling business, a complete estimated summary of income and expense for alleys ranging from 4 to 48 lanes in size (see accompanying tables). This summary will include such items as rent, manager's salary, maintenance supplies, advertising and promotion, social security, federal, state, and city licenses, personal property tax, insurance, utilities, depreciation on equipment, incidentals, and everything else that a prospective proprietor would need or want to know about the business.

Space Requirements

A glance at Figs. 2, 3, and 4 will serve to convey some idea of the average space requirements for bowling alley installations of typical popular sizes. The manner in which the space available can be best utilized is a question which the

TWO RICH SOURCES of extra profits at Narlock Lanes, Bay City, Mich., are the nearby grill and display for the sale of bowling equipment.

theatre operator should also take up with his local Brunswick representative.

Construction Costs

As far as construction costs are concerned, this is likewise an individual matter which the prospective proprietor must work out with the sales agent. For example, Brunswick has many types of standard or de luxe covering masking or sans masking units, ball returns with or without newel posts, plain or semi-automatic pinsetters, etc. Again, if a theatre operator wants any sort of information regarding bowling alley installations, it is best to call in a representative and discuss the entire situation; there is no obligation whatsoever for his service.

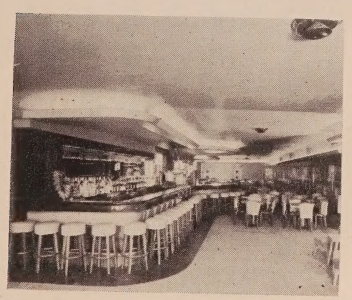
Overhead Costs

The overhead costs of operating bowling alleys is largely dependent upon the wages, advertising, taxes, insurance, utilities rates, etc., prevailing in a particular area. For example, wages for pin boys (the greatest overhead in a bowling alley establishment) are dependent in every instance upon conditions in the area—whether or not it has a union, etc.

It should be pointed out that overhead usually decreases proportionately as the number of lanes increases. All a bowling alley requires, whether it has 2 lanes or 22, is one or perhaps two managers, so generally the only increase in overhead as far as personnel are concerned is in regard to the larger number of pin boys needed. The increased dollar volume, however, compensates for this additional expense.

TYPICAL INSTALLATIONS

In order to convey to the reader a better understanding of the various fac-



COCKTAIL BAR adjoining Narlock Lanes draws the bulk of its patronage from among the bowlers.

Table III—Analysis of Income and Expense for a Typical 24-Lane Establishment with 10 Billiard Tables and Cocktail Lounge

Summary

	Gross Income	*Total Expenses*	*Profit Before Federal Income Taxes*
Bowling	$133,350.00	$ 93,466.20	$39,883.80
Billiards	21,000.00	12,231.20	8,768.80
Miscellaneous	119,910.00	92,355.20	27,554.80
Total →	$274,260.00	$198,052.60	$76,207.40

Breakdown of Income

BOWLING			
League Season			
League Play	30 lines per day x 24 lanes x 5 days x 35 weeks = 126,000 lines @ 35c	$44,100.00	
Open Play Weekdays	20 lines per day x 24 lanes x 5 days x 35 weeks = 84,000 lines @ 35c	29,400.00	
Open Play Weekends	50 lines per day x 24 lanes x 2 days x 35 weekends = 84,000 lines @ 35c	29,400.00	
Summer Season			
Open Play	25 lines per day x 24 lanes x 7 days x 15 weeks = 63,000 lines @ 35c	22,050.00	
Other			
Shoe Rentals	231,000 lines of open play. Average 3 lines per bowler—77,000 bowlers. Rentals on basis of 50%—38,500 @ 15c	5,775.00	
Ball, Bag and Shoe Sales	Sales at gross average of $30 per day for 350 days—$10,500—profit 25%	2,625.00	
	Total Bowling Income →		$133,350.00
BILLIARDS	10 tables @ average gross income of $6 per table per day x 350 days	21,000.00	
	Total Billiard Income →		21,000.00
MISCELLANEOUS			
Food and Beverage	75% of combined bowling and billiard income	115,760.00	
Candy, Cigarettes and Soft Drinks	$15 per day for 350 days @ 15% profit	790.00	
Check Rooms	42,000 league bowlers in 35 weeks 80% checking @ 10c	3,360.00	
	Total Miscellaneous →		119,910.00

Breakdown of Expenses

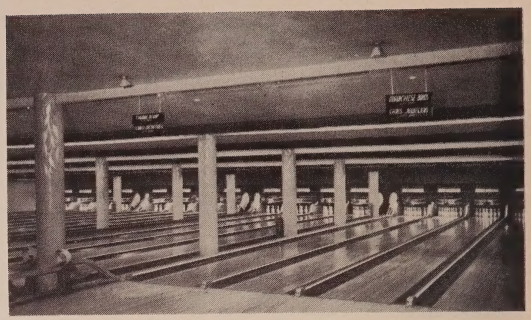
	Bowling	*Billiards*	*Misc.*	*Total*
Rent (a)	$14,400.00	$ 1,200.00	$ 8,400.00	$ 24,000.00
Pin Boys' Salaries (@) 10c per line	35,700.00	—	—	35,700.00
Manager's Salary ($10,000 per year)	6,000.00	—	4,000.00	10,000
Asst. Manager's Salary (2 @ $3,600 per yr.)	7,200.00	—	—	7,200.00
Maintenance Men (2 @ $2,600 per yr.)	5,200.00	—	—	5,200.00
Billiard Manager ($3,000 per yr.)	—	3,000.00	—	3,000.00
Billiard Counterman ($2,700 per yr.)	—	2,700.00	—	2,700.00
Bartenders (3 @ $3,640 per yr.)	—	—	10,920.00	10,920.00
Waitress ($1,300 per yr.)	—	—	1,300.00	1,300.00
Checkgirl ($1,300 per yr.)	—	—	1,300.00	1,300.00
Porters (3 @ $2,080 per yr.)	2,080.00	2,080.00	2,080.00	6,240.00
Maintenance, Supplies and Resurfacing	6,000.00	500.00	—	6,500.00
Advertising and Promotion	1,000.00	300.00	500.00	1,800.00
Social Security @ 4%	2,031.20	311.20	595.20	2,937.60
Federal and City License (b)	600.00	250.00	1,000.00	1,850.00
Personal Property Tax	1,425.00	150.00	300.00	1,875.00
Insurance (c)	2,280.00	240.00	480.00	3,000.00
Utilities (Heat, Light, etc.)	2,000.00	500.00	500.00	3,000.00
Outside Fees (Bookkeeping, etc.)	1,200.00	200.00	600.00	2,000.00
Depreciation on Equipment (d)	4,750.00	500.00	2,000.00	7,250.00
Incidentals	1,600.00	300.00	500.00	2,400.00
Cost of Food and Beverages	—	—	57,880.00	57,880.00
	$93,466.20	$12,231.20	$92,355.20	$198,052.60

(a) Rent paid if premises are leased; or, if building is owned, it includes depreciation, real estate taxes, interest on mortgage, insurance on building, maintenance expense. Rent is distributed on basis of approximate space occupied by each operation.

(b) Federal license @ $ 20 per lane and table;
City license @ $ 5 per lane and table;
Liquor license @ $1,000 per year

(c) Complete insurance coverage—fire, burglary, workmen's compensation, public liability, use and occupancy, etc.

(d) Depreciation figured at 5% on bowling and billiard equipment, 10% on lounge equipment.



LOCATED WITHIN A SHORT DISTANCE OF EACH OTHER, the Oriental Lanes and theatre form a profitable business partnership. The 21 bowling lanes are currently being extensively modernized.

tors which lend themselves to and support a mutually beneficial alliance between bowling alleys and theatres, two typical projects of this nature are presented below.

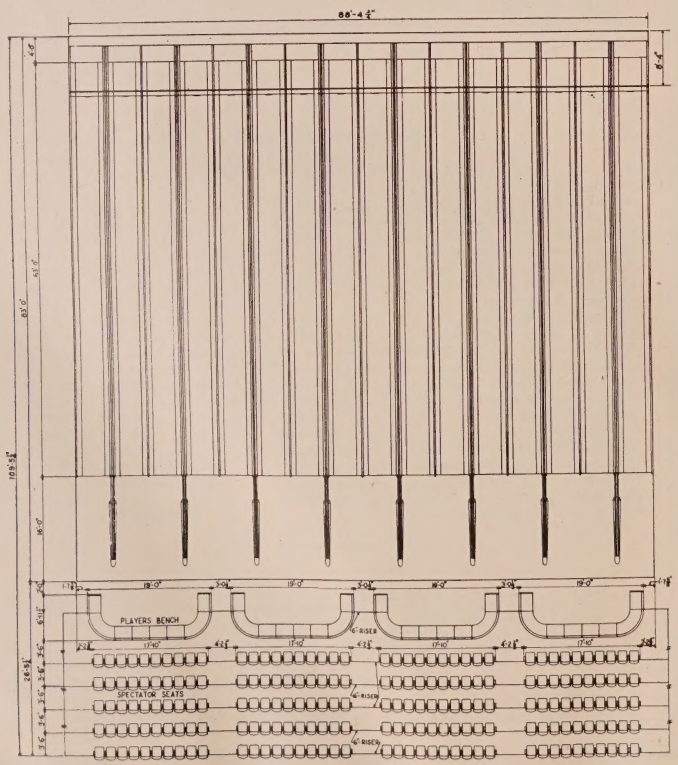
Oriental Lanes, Milwaukee, Wis.

Located 28′ below ground level in the basement of the Oriental Theatre, 2220 N. Farwell Street, the Oriental Lanes contain 21 bowling lanes, five billiard tables, a snack bar with a seating capacity of 24, and 100 spectator seats (space limits the use of more) situated directly behind the 21 lanes. The total basement area available is 28,560 square feet. A cocktail lounge adjoins the bowling alleys.

The noise factor (crashing of the ball against the bowling pins) was completely eliminated by setting the pit end section of the bowling alleys under the stage of the theatre. It should be pointed out, however, that while this particular layout serves the Oriental Lanes extremely well, it might not be the most advisable procedure to follow in other cases. Competent acoustical engineers can easily make the necessary provisions to eliminate this noise factor entirely in most cases.

Bowlers are charged $.35 a game for open play throughout the regular summer bowling season. League bowlers are charged $1.00 for three games (standard league play) before 5:30 p.m. and the regular rate of $.35 for bowling after this time. According to Proprietor Howard Blong, Oriental Lanes averaged 55 lines (games) per alley per day during 1950, with a high total of 1,986 games one Sunday afternoon.

FIG. 3—16-bowling lane installation with center ball returns (one of the most popular sizes).



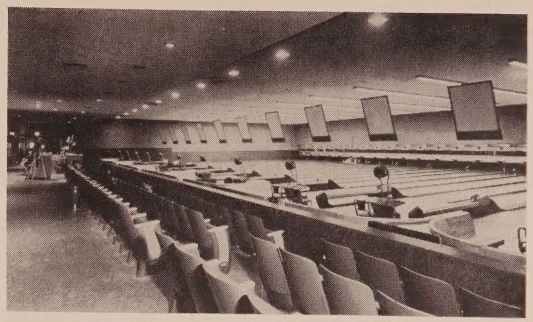
The billiard tables which are operated along with the bowling alleys are a rich source of additional revenue. According to Blong, the operating cost of the tables runs only in the neighborhood of $500, and a net profit of $5,000 is pocketed at the end of the year. This high margin of profit is, of course, aided by the fact that the tables practically operate themselves. The desk man in the lobby is able to take complete charge of the billiard room without ever having to leave his desk.

Charges for the use of the billiard tables are dependent upon the number of participants and the playing time. Although other billiard operations in various localities may well have different fees, the Oriental Lanes enterprise charges $.60 an hour for single players, $.70 for two players, $.80 for three players, and $1.00 for four or more.

Another good producer of extra profits at Oriental Lanes is the rental of small compact lockers, especially designed by Brunswick for men and women bowlers, at a seasonal fee of $1.00. The lockers are erected in tiers of five which measure 30″ wide, 22¾″ deep, and 72″ high. Upkeep, except for fluorescent lights, is practically non-existent.

The adjoining cocktail lounge, plus cigarette and candy concessions, also contribute their due share of extra income to the overall operation. The bar even attracts a good many people who are neither bowling alley nor theatre patrons, but more often than not the cocktail lounge is mainly populated by those who have also spent money in the bowling alleys, theatre, or both, as well.

The operation and maintenance of the Oriental Lanes may be easily broken down. One person at the desk in the lobby takes care of both the billiard room and the bowling lanes. This same individual can also be used to assist in other capacities, if the need arises. One maintenance man takes care of the bowling lanes from the spectator seats to the pits, and two cleaning girls come in for four hours during the morning to keep the entire establishment sparkling clean.



BILLIARD TABLES ADD TO BOWLING ALLEY PROFITS without additional operating burdens, as here at Bradnan's Recreation in Ohio. RIGHT: The 22 lanes at the Park Bowl, San Francisco, are well laid out.

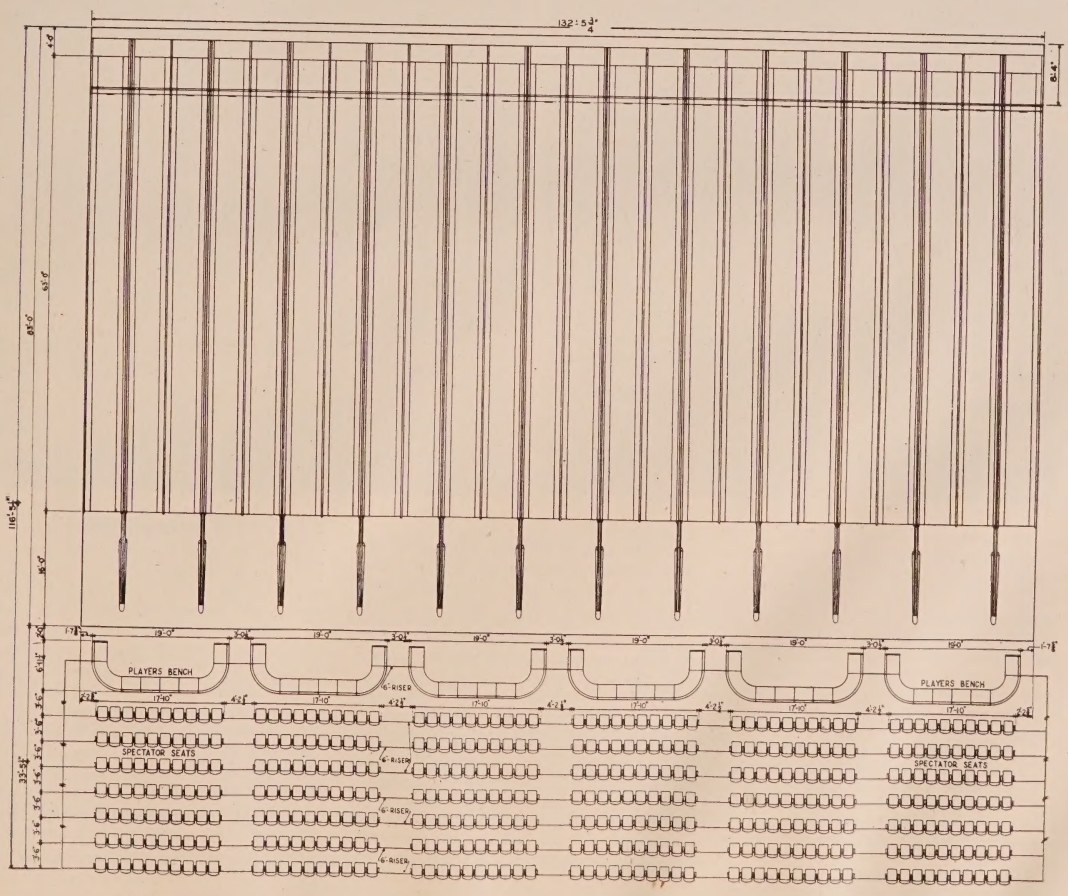
The Oriental Lanes represent a profitable financial venture because 93% of the total square footage is income-producing. The fact that they have helped considerably to up admission receipts at the Oriental Theatre, and vice versa, furnishes an excellent example of how bowling alleys and theatres may be successfully operated together for mutual benefit.

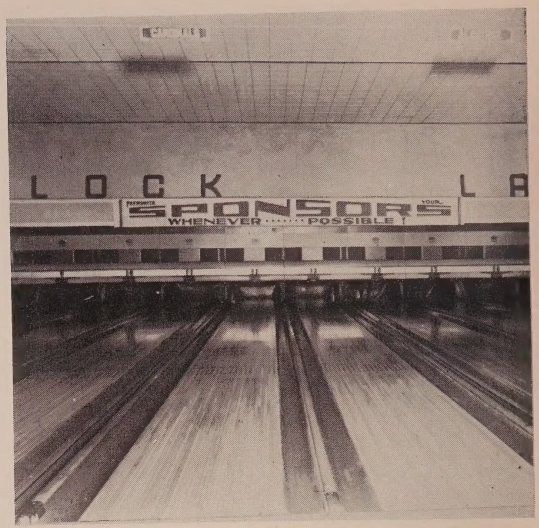
Narlock Lanes, Bay City, Mich.

Part of a block-long project with a depth of 150', Narlock Lanes opened in March, 1947, and the adjoining Empire Theatre, managed by A. M. Alarie, was opened in October, 1948. Other facilities in the group include a cocktail bar and grill. The former is situated between the 1,500-seat motion picture house and the bowling alleys, while the latter is at the far end of the alleys. The entire project is owned and operated by Art Narlock, an enterprising young businessman who has given the community one of the finest recreation centers in the country.

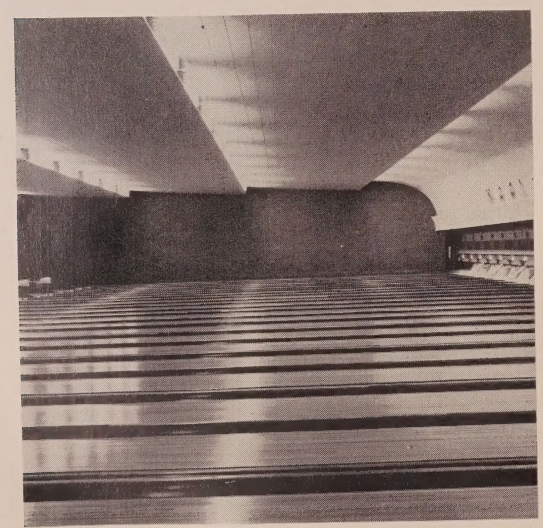
The 24-lane bowling alley is outfitted with Brunswick equipment and contains 250 spectator seats with room for 300

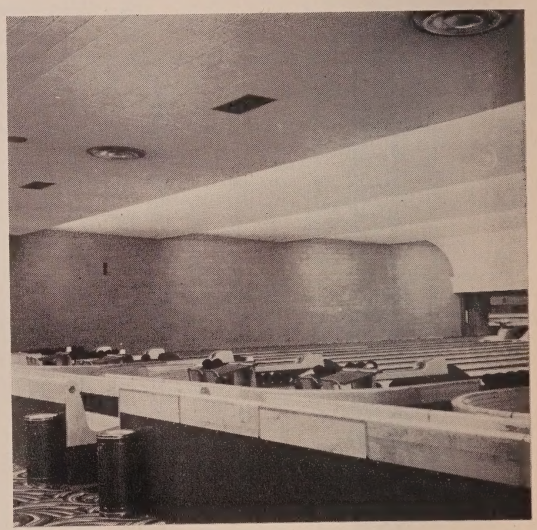
FIG. 4—24-bowling lane installation with center ball returns (capable of handling sizeable crowds).





AN OVERALL VIEW OF THE NARLOCK PROJECT in the upper left photo shows how the various enterprises are linked to one another naturally for mutual benefit all around. At right is a view down the alleys. BELOW: A cross-view (left) of the 24 lanes and a section (right) from front.





to 400 standees directly behind. Air-conditioned for summer comfort, the alleys are used for league bowling Monday through Friday nights with two shifts nightly at 7 and 9 p.m.; there is, however, a special league on Saturday and Sunday. In addition, there are two morning shop leagues and two women's leagues on different afternoons. Otherwise, weekday afternoons, Saturday, and Sunday are free for open bowling.

Although the bowling area itself includes no other special activities, such as billiard tables, there are, however, men's and ladies' locker rooms, check room, rest rooms, a refreshment stand, and a special counter for the sale of bowling equipment.

Doors from the bowling area proper lead directly to the cocktail lounge at one end and to the grill at the other. The lounge is unusually large for the population of the town but has been very successful with notably faithful attendance on the part of bowlers and theatre patrons. There are quite a number of stools at the bar itself, tables in the center, and a fair-sized stage for the presentation of nightly entertainment. The grill is large enough to accommodate a good crowd of diners at its counter stools and tables.

From all reports, the various enterprises dovetail nicely and aid one another. This is particularly true as far as the bowling alleys and theatre are concerned, for the patrons of one seem to become steadfast patrons of the other also.

CONCLUSION

Thus, it may be seen that bowling alleys and theatres form an ideal partnership. The one complements the other nicely, and the operator is in a position to make an excellent profit from both. The combination of the two provides a ready answer to such questions as: What to do after bowling? What to do with the children during bowling? What to do if friends have seen the movie and you haven't? What to do if there is a long line waiting for the movies? What to do if the theatre show is over, and the evening is only beginning? All of these questions are satisfactorily answered when a theatre adjoins a bowling establishment.

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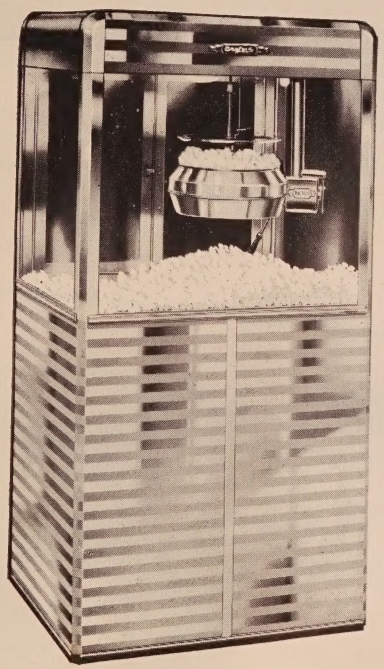

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TELEVISION *and* 16 mm. FILM

1950-51

The GPL Theatre Television System

Video Images Are Recorded And Projected With Far Better Definition by New Film Intermediate Method

BRIEF: ***Television . . . probably the fastest growing industry in the U. S. . . . has undoubtedly been largely responsible for the decline in theatre boxoffice receipts in recent years . . . and which only now are experiencing a slight upturn again . . . There is no denying the fact that television does pose a genuine threat . . . which must be met and conquered . . . if the movies are to continue to capture their due share of the entertainment dollar.***

Not one to be caught napping . . . or to take punishment lying down . . . the film industry has earnestly sought ways to answer the challenge . . . The most practical solution to the problem . . . thus far devised . . . is one which embraces the "enemy" as a bedfellow . . . theatre television . . . Already tried . . . and proven quite successful . . . this new supplement to the regular film program appears earmarked for more widespread adoption in time.

Two types of systems . . . the direct and film intermediate . . . have been developed for large-screen theatre television showings . . . The former . . . which projects a received signal directly from the air onto the screen . . . has been in use for a number of months . . . The latter . . . which records an image on regular motion picture film before projecting it . . . has only recently been developed . . . Known as the GPL Videofilm Theatre Television System, this versatile method is discussed below with respect to: its equipment . . . operation . . . and outstanding advantages.

The extraordinary and rapid growth of television since the end of World War II leaves little doubt that this new entertainment medium is here to stay. A strapping industrial giant, whose total capital investment exceeds the billion dollar mark, television has already exercised a far-reaching influence on U. S. social and economic life during its comparatively short existence.

In spite of the fact that a shortage of materials caused by the current defense program may partially dry up the onrushing flood of television set production, there is every reason to believe that receivers for home use will continue to flow from the factories at a fairly good clip to living rooms all over the country. In short, this new wonder, with its unique ability to capture the immediacy of events as they transpire, is destined to assume even greater popularity with the passage of the years.

As more sponsors' dollars are won over to the rich and still only slightly tapped field of advertising potentialities offered by television, the quality of programs will continue to improve and attract a larger and larger audience. No one in his right mind could honestly say that it is merely a new fad which is predestined to go the way of such ephemeral developments as the yearly fashion styles.

Just as the automobile prompted an upheaval of seemingly infinite proportions in the American way of life, so television already has bitten deep into the very roots of U. S. habits and mores While it can, of course, be properly described as an important educational medium as well, television is essentially a new form of entertainment, and it is in this sphere that its impact has been felt to the greatest degree. Briefly, television has brought the American family back into the home for much of its diversion . . . and thus away from other places of amusement. This dislocation has, naturally, affected all segments of the entertainment industry, including the motion picture theatre.

THEATRE TELEVISION

Shortly after home television became a practical reality, the theatre industry began to realize that here was a formidable challenge to its long-held position as the top mass entertainment medium. Reliable public surveys showed that television broadcasts were keeping people home a great deal more with a resultant decline in theatre attendance. While there seemed to be little likelihood that the populace would lose all desire to attend the movies, the aforementioned drop in boxoffice receipts caused justifiable fears in many quarters that the margin of profit in some theatre operations might well be decreased seriously or wiped out, particularly in sections of the country where there was a heavy concentration of homes with video sets.

Unfortunately, while television had been booming, the motion picture industry had been beset by a number of internal problems resulting from falling revenues due to other causes as well as television, anti-trust divorcement cases, distributor - exhibitor relationships and practices, etc. In spite of its concern with these troubles, however, the industry finally pulled itself together, after the initial shock of television had eased, to meet this challenge in the same brave and determined fashion with which it has stood up to other obstacles during its glorious history.

An Alliance Is Formed

Since it is usually always wiser to attempt to convert a foe into an ally, rather than to engage in a long and costly battle which may have no real victor, the more progressive members of the theatre industry soon began to devote their thoughts toward devising ways and means of putting video to work for the theatre. As a result of their positive efforts in this direction, theatre television came into being as a practical answer to the inroads of the home variety on motion picture attendance.

Offering as a capital advantage the mammoth size of the theatre screen as compared to the relatively diminutive viewing area of the average home set, theatre television is designed to supplement, not supplant, quality feature films. There is nothing radically new in this approach, for theatres have always supplemented film features with stage shows, vaudeville, amateur talent contests, and other live attractions.

Theatre television can achieve, for the first time, in a network of theatres a mass distribution of superior live events and entertainment as they happen, rather than in a single theatre at a time. Furthermore, by attracting more people to the boxoffice, it can increase the total income of all segments of the motion picture industry. Patrons who come to theatres equipped with television will see film as well as video attractions, thereby adding to the economic stability of producers, distributors, and exhibitors alike.

Success of Pioneer Showings

Evidence of the assertion that the first theatre television installations have brought more people to the boxoffice than any other non-film attraction is found in the fact that 16 of the nation's leading theatres, by the end of 1950, were equipped to present television programs on a regular basis. Among these are the Music Hall, Minneapolis, State-Lake, Chicago, and the Fabian houses in the East.

Typical of the warm welcome accorded theatre television showings was the enthusiasm engendered by a presentation of the 1950 Army-Navy game at the Fabian Fox in Brooklyn. Since the spectators were right on the 50-yard line in Philadelphia along with the two teams, the auditorium became a bedlam of cheers, whistles, and applause. By way of contrast to this immediacy of exhibition, little spectator reaction was reported to the films of the game distributed later that week to houses throughout the country.

The boxoffice appeal of exclusive theatre television features was demonstrated also in the fall of 1950 when five Big Ten football games were telecast in two Chicago theatres to overflow business at the State-Lake and to a near-capacity house at the Tivoli. Showings of other events, such as concerts, have likewise proven the boxoffice drawing power of theatre television in providing a view of events as they actually take place. This sense of immediacy, which has been largely responsible for the growth of television in the home, can be even more effectively utilized to drawing crowds to the theatre with its far superior exhibition facilities.

Methods of Exhibition

Two main systems are presently being used by those theatres pioneering theatre television. The first of these is a direct and instantaneous projection system by which high brilliance kineoscopic images are projected through an efficient reflective optical system. The other, discussed below, is a film intermediate system which uses standard motion picture projection techniques, once the television images have been photographed on motion picture film and suitably processed.

THE GPL VIDEOFILM SYSTEM

This theatre television system, developed by General Precision Laboratory, Pleasantville, N. Y., and demonstrated at the 1950 TESMA Show in Chicago and the TOA Convention in Houston, represents an ideal "marriage" between the immediacy of television broadcasting and the technical advantages of motion picture film projection, as opposed to the imperfections of the ordinary video image.

Anyone who has ever witnessed a conventional telecast can attest to the fact that the picture shown on the receiver screen is often marred by flicker, blur, unevenness of light distribution, and other shortcomings which have yet to be ironed out in the direct view method. These drawbacks are, however, not found in the GPL System because, as the name implies, the television picture shown screened is on film with all possible clarity, brightness, and tone-quality present.

Equipment

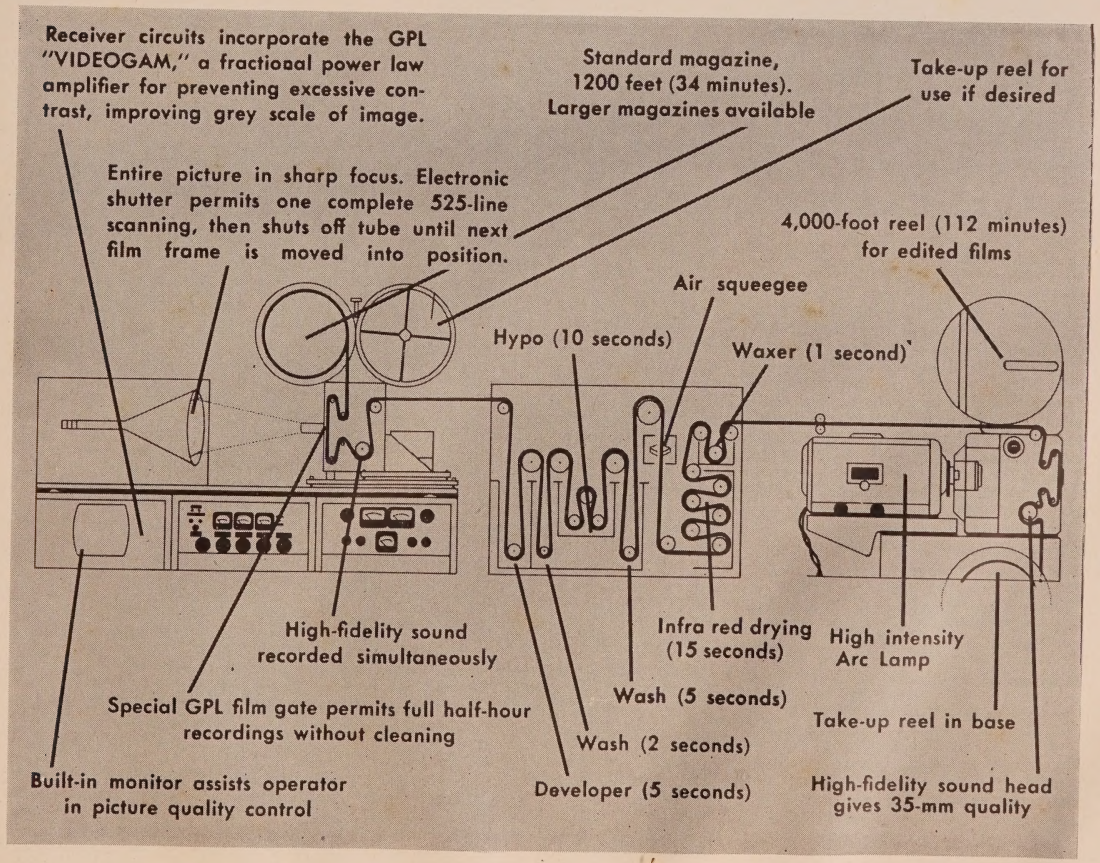
The GPL Videofilm Theatre System is made up of three compact units: a video recorder, a rapid film processor, and a 16mm projector. An important part of the video recorder is the receiver-monitor, designed for quality reception of commercial telecast bands and adaptable to the type of reception involved in each individual installation — whether direct, by microwave, or by coaxial cable. It is said to contain many times the power of an ordinary television receiver with the picture in sharp focus over the entire tube area. The television picture tube image flashes on automatically when film frame is in place. An electronic shutter permits one complete 525-line film scanning, then shuts off the tube while the next frame is moved into position. The high-quality picture monitor assists the operator in obtaining the best results for projection.

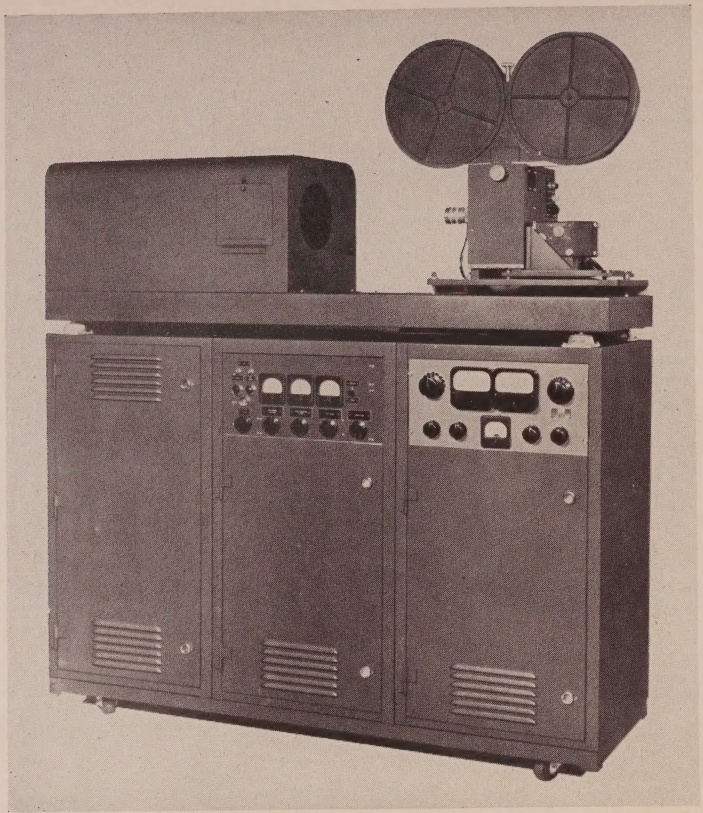
The video recorder as a whole uses 16mm, 24 frame-per-second motion picture sound film. Images are produced in negative, reversal positive, or direct positive. Video recording can be made with video signals received from remote locations. A built-in corrector electronically converts the harsh "gray" scale of television pictures, as customarily broadcast, to the less contrasting, more pleasant gamma that the public associates with motion pictures. Standard stock tubes are used throughout, and the recorded sound is of superior quality.

The rapid film processor develops film at a synchronous speed of the 16mm sound projector—24 frames a second, 36 feet a minute. The total film processing time from the entrance to the developer and exit from the waxer is 40 seconds. Since operation is fully automatic, the part-time attention of one man only is required. The system shuts off automatically if the film breaks anywhere in the system. Standard film and solutions are used, and the unit may be operated in a fully lighted room. Ordinary hose connections are suitable for all water, air, and waste facilities. Developer, fix, and wash are automatically neutralized so that they can be discharged into any sewer connection.

The 16mm projector used in the GPL System is reported to afford the same brilliance, contrast, and sharpness gen-

THE PICTURE TRAIN from air to screen passes through the three joined units in less than one minute, plus any editing time necessary.





UNIT No. 1 is the Video Recorder which takes the picture from small receiving tube through a special camera using 16 m.m. film and electronically corrects it to normal film speed of 24 frames per second.

erally associated with 35mm performance. The lens resolves 90 lines per mm. over all parts of the screen image, and there is no center "hot spot" effect. A sprocket type intermittent, running in a continuous oil bath sealed so that no oil reaches the film, insures long life for intermittent and film. Sound flutter or "wow" is said to be at an absolute minimum. A scanning slit less than five ten-thousandths of an inch provides a sound response essentially flat from 25 to 7,000 cycles. The equipment may be wired to existing sound facilities with results allegedly equal in quality to 35mm sound.

The three units of the GPL Videofilm System can be located in separate rooms, different parts of the same projection room, or side by side, depending on the geography of the theatre and the space available.

Operation

The operation of the GPL System (see accompanying diagram) is briefly as follows: The video program is photographed from a small picture tube onto moving film. The film continues into the rapid film processor, where it is developed, washed, dried, and waxed, all in a few seconds. It next is passed into a 16mm arc lamp projector sufficiently powerful to throw a clear image onto a full 24' x 18' screen.

Conversion of the 30-frame-a-second frequency of television to the 24-frame-a-second standard speed of the motion picture camera is effected electronically when the program is photographed. After the camera has pulled down one frame and is holding it motionless before the aperture, a cam-actuated connection between camera and the video receiver switches the picture tube into action. The tube remains in operation until scanning of 525 lines is completed. When one complete picture has been impressed on the face of the film frame, the picture tube goes dark until the pull-down has been completed and a new frame is in the aperture. An electronic counting circuit regulates the operation of the picture tube.

Since, the picture tube does not show the ordinary television image, but its negative, no negative film is necessary for immediate projection. The negative image on the tube can photograph positive on the film and is ready for projection the moment it has been developed and dried. The versatile film processor also permits the making of sufficient negatives for any number of circulating prints.

Magazines are available large enough for more than two hours of continuous entertainment. In the case of a longer program, the mechanism may be stopped at any convenient intermission and a new film spliced on at the magazine.

The new GPL camera gate is especially designed to permit half-hour operation without cleaning. If the exhibitor does not intend to show the film at once, it can be threaded back from the rapid film processor to a take-up magazine on the projector. It can then be edited at leisure with standard 16mm editing equipment.

Outstanding Advantages

In spite of the fact that a direct theatre television system projects a picture onto the screen instantly without any delay whatsoever, whereas the GPL Videofilm System requires a few moments to transfer the image to film, the whole process takes only 60 seconds, so the time interval between actual receipt of the signal and the projection of the picture is negligible, especially in view of the previously mentioned benefits to be derived from film as far as the quality of image is concerned.

The advantages of this film intermediate system are not, however, by any means limited to better projection of a television broadcast. As a matter of fact, the GPL Videofilm System has many other features and potentialities which a direct projection system does not provide and which are important from many points of view.

First of all, the GPL System offers the exhibitor complete control over programming. The televised feature can be recorded before the theatre is open to the public, while the feature film is on the screen or at any other time. It can then be projected almost simultaneously with its reception or edited and shown later. The exhibitor can repeat its showing any number of times or route it through an entire circuit of theatres with no additional cost for re-projection of the television recording.

By way of contrast, it is impossible to set showing times for direct projection television unless the televised attraction is definitely scheduled, and even then such scheduling would be subject to fate and the time zones. For example, if Pearl Harbor were to be bombed again at 6 a.m. on a Sunday morning and a television camera chanced to be on the spot in newsreel fashion, it would reach the theatre television projector set at 10 a.m. on the same Sunday in Philadelphia and New York before theatres were open or patrons available. It could not be delayed, recaptured, or shown later when the audience had assembled under the direct projection system, and, therefore, its stimulant as a boxoffice attraction would be dissipated.

By the same token, the Kentucky Derby and the Rose Bowl football game would be shown at dinner time in certain sections of the country because of the time zone element, while the Philadelphia New Year's Parade would start at 5 a.m. in the morning on the screens of West Coast theatres. Obviously, not many theatre patrons would get up this hour to see anything. Thus, even though it is possible to schedule and advertise definite events, as contrasted to the spot news impossibility of doing so on unexpected occurrences such as Pearl Harbor,

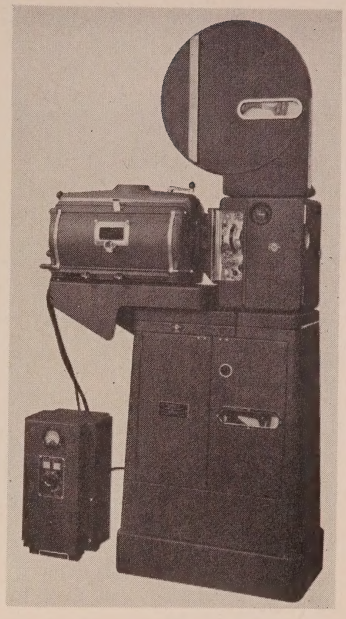
direct projection theatre television is subject to the vagaries of non-theatre-attendance times.

On the other hand, with a film intermediate system, happenings of the last 24 hours or several days can be scheduled and advertised in advance and shown over and over again until the public no longer wants to see them. Furthermore, as pointed out above, unscheduled events can be filmed at any time and shown later. Therefore, for all practical and financial reasons of box-office dollar income, the GPL System seems to have definite advantages over the direct type.

Secondly, while the GPL System enables the exhibitor to edit out any imperfect or undesirable sections of film, it also makes it possible for him to build up a "film library" of reels that he may show again weeks, months, or even years hence, if he cares to do so. In other words, he has a permanent record of happenings that he could never have with a direct type of theatre television system whereby only one showing is possible.

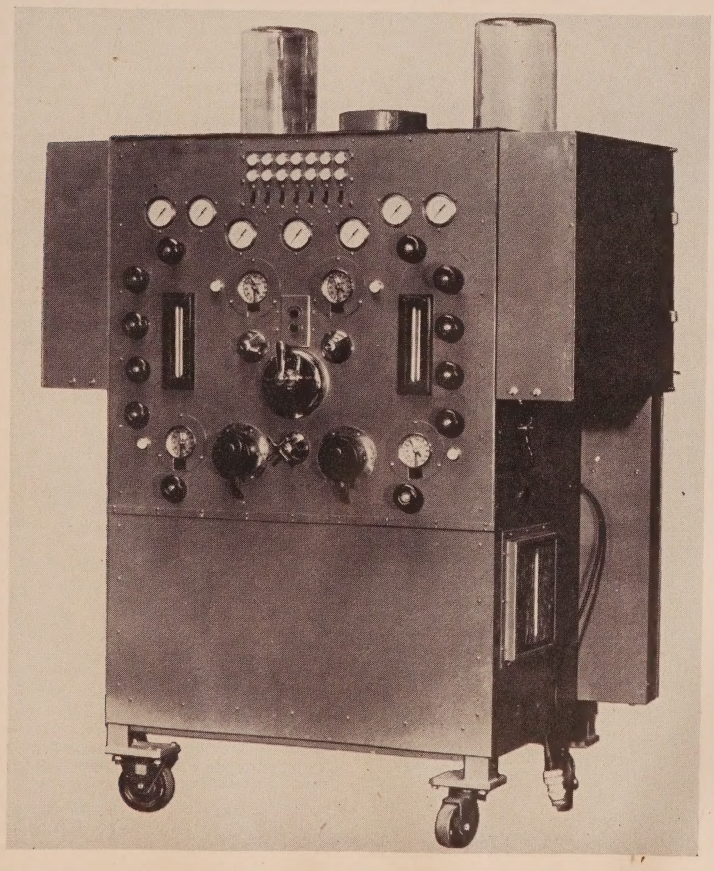
Thirdly, it seems possible that the GPL System could readily be operated by the normal projection booth personnel with a little training. Of course, there is always the question of whether the unions would permit the regular projectionists to take care of the theatre television system also, and, if they should decide that other personnel should handle it, operating costs would go up accordingly, particularly if the unions were to go so far as to demand that the television system operators be paid for 40 hours a week, even though television showings were given only a few hours during that period. The solution to this problem is, naturally, one that remains to be seen.

From another cost viewpoint, however, the GPL System offers a definite notable advantage with its use of 16mm film instead of the 35mm type. Figures obtained from a reliable source would appear to indicate that with 35mm film the film cost would approximate $80 an hour, the chemical for processing $6 an hour, and the power $.50 an hour for a total of $86.50, while these costs for 16mm film would be $17, $4, and $.30 per hour, respectively, for a total of $21.30. It would then appear that operating costs are reduced by approximately 4/5ths through the use of 16mm film instead of 35mm.



UNIT No. 3 is heavy duty projector and projection arc lamp that guarantees a good image.

UNIT No. 2 is the rapid Film Processor that develops, washes, dries and waxes the positive print in less than a minute and speeds it on its way. This miniature laboratory can make extra prints.



A final point still to be researched is whether the possession of a processing laboratory and 16mm projector and sound system will not open possibilities for the showing of newsreels of local events, such as the neighboring high school football game or the town baby parade, on the same night they took place to a real dollar advantage.

CONCLUSION

Although the development of equipment such as the GPL Videofilm System, which is being distributed by National Theatre Supply, has proved the technical feasibility of theatre television, its future, of course, will lie in its economic practicality.

Due to such factors as the high cost of materials and labor, both the direct and intermediate film types of systems are currently priced in the neighborhood of $25,000, but, as demand permits the introduction of mass production techniques, this figure will undoubtedly be lowered considerably. Even so, the majority of exhibitors who have already installed theatre television in their houses are inclinded to feel that they will recover the initial installation cost rapidly with increased attendance.

If we may judge from the success which has attended the theatre television showings given thus far, it is more than reasonable to assume that their popularity will increase further with the passage of time. The outlook appears to be an optimistic one, for various industry groups are continuing to seek the allocation of air channels from the Federal Communications Commission for exclusive theatre television shows that will bolster the welfare of the nation's film houses.

A Theatre Television Training Program

Both Residential and Home-Study Courses Offer Theatremen Thorough Grounding in Video Techniques

To paraphrase an old cliché, television is here to stay. So is electronics, and both the management and the operating staffs of the nation's theatres know it. Furthermore, they are doing something about the future; not berating the unkind fate that yanked this lusty competitor out of a hat, but learning all they can about its fundamentals and its behavior. Most theatremen still remember the coming of sound and the havoc it wreaked on the once placid world of the silent cinema. They realize now that technical developments cannot be ignored.

Getting acquainted with the electronic age means going back to school. In 1948, the Chicago local of the I.A.T.S.E. selected DeForest's Training, Inc., to prepare some of its members for the coming era of theatre television. Underlying the project was an acceptance of video as an ally rather than as an arch foe; and the realization that theatre television is simply another facet of the fundamentals of television. DeForest's Training, Inc., provided the background and training required for a practical, technical knowledge of the field and its special application to theatre entertainment.

Background

Established in 1931, DeForest's Training, Inc., offers both home training through correspondence tuition, and residential laboratory training in Chicago. The school has earned an enviable reputation for itself. It is a member of the National Home Study Council. When it received the Certificate of Merit from the New York Museum of Science and Industry in 1947, it was the only school of its kind in the country ever to be so honored, and was praised for one of "America's foremost home study and laboratory courses in radio, electronics and communications." During World War II, D.T.I. was commissioned by the Government to help train Army Air Force Instructors on electronic gunnery training devices. Later, it cooperated with many of the nation's leading railroads in preparing a highly specialized training course for railroad employees in two-way train radio. By experience and by reputation, DeForest's Training, Inc., is well qualified to teach theatre industryites the fundamentals of theatre television.

Emphasis is on the practical aspects of television, with theory streamlined to serve best the learn-by-doing educational program. After a thorough grounding in the fundamentals of radio (tubes, receivers, and amplifiers; radio reception and transmission; and radio servicing), the student—if he so elects—moves directly into modern electronic television and advanced television. The theory basic to the operation of television is explained step by step in such a manner that the student obtains a clear idea of the invisible electronic activity in progress behind the facade of his receiver. In applying the basic principles he learns to theatre television, the student discovers that only superficial modifications in the general theory are involved in the easy transition to his own specialized field.

BRIEF: ***Although it is still in a relatively experimental stage, theatre television shows every promise of becoming a valuable adjunct to motion picture showings . . . It is certain . . . as the cost of such equipment is lowered and other technical problems solved . . . that video will be installed in more and more theatres.***

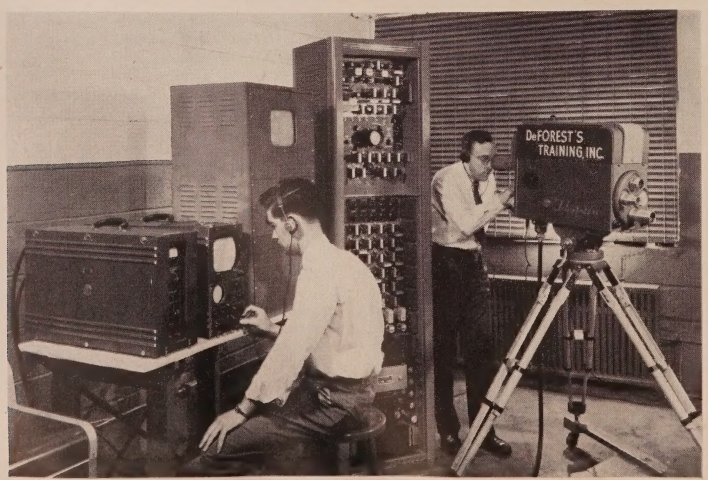
Theatre television . . . in recent months was used in some metropolitan areas to bring major sporting events to the public . . . While these programs previously were not presented on a definite schedule, the opening of the 1950 "Big Ten" football rivalry brought "theatrecasts" to fans in Chicago . . . every Saturday during the season . . . Two theatres exhibited the games each week . . . and excellent attendance proved the great interest the public has in this medium of entertainment.

In answer to the need of theatremen for training in television, a Chicago technical school . . . DeForest's Training, Inc. . . . offers a complete home training or resident program in television . . . including theatre television . . . to management and operators of picture houses.

A special program . . . used in 1948 by the Chicago local of the I.A.T.S.E. to prepare some of its members for the theatre television era and since revised . . . stresses practical applications as well as theory . . . Movies are used to illustrate and clarify various lesson topics . . . both at Chicago and in the student's home.

The following article describes the background of the school . . . and the study methods in some detail.

THE D.T.I. SERIES of courses uses the latest professional equipment wherever possible. Here shown are two students seated at the power supply unit, camera control monitor, line monitor and synchronizing generator, and standing to operate a camera similar to those found in many of the nation's TV stations.



Two Different Methods

The efficient organization of study material permits the training to be covered either in residence at Chicago or at the student's own home—halfway around the globe if necessary. While the study plans in residential training differ in procedure from those in home training, the basic material in each approach is identical. Laboratory students progress under the guidance of a skilled instructional staff, while the home students are carefully supervised and checked by D.T.I.'s student relations department, lesson-grading department, and the consultation department. The last-named handles all technical questions which may be submitted by a home student, offering practical suggestions designed to keep enrollees constantly on the right track.

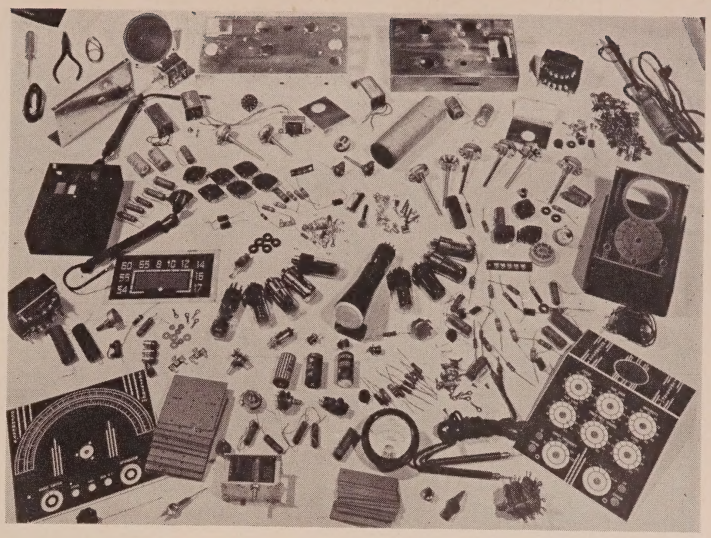
"If you are able to come to Chicago for at least at 36-week period," states D.T.I., "you can get all of your training

in one of the nation's newest, finest training laboratories." The residential program requires steady attendance at the D.T.I. Chicago laboratories and classrooms, six hours a day, five days a week for a period of 36 weeks, 48 weeks, or 96 weeks—depending upon the plan selected. The popular 36 weeks' training program provides a theatreman with a thorough basic technical training in preparation for the coming era of theatre television. The 48 weeks' training program includes all of the subjects studied in the basic course and presents additional work in Industrial Electronics, including such subjects as: electronic motor control; high frequency electric heating; photo-electric cell applications; electronic control applied to electric welding; and other phases of the electronic field. The exhaustive 96 weeks' program includes all the subject matter in both previous courses and round out the student's training with radio engi neering and design work.

Each laboratory student spends about half of his training time in the classroom; the other half in the laboratory on practical, learn-by-doing projects. Instruction is carried out in a new, modern, post-war building that is filled with what is said to be one of the finest and most complete assortments of commercial type radio-electronic equipment for training purposes in the country. For example, D.T.I. students have at their disposal an impressive variety of commercial radio servicing and test devices of various makes and types; the television laboratory contains a veritable wealth of cathode ray oscilloscopes, signal generators, television receivers, an Image Orthicon television camera, related television equipment designed to duplicate an actual television studio, and an Iconoscope camera such as used by television stations to televise motion pictures. The D.T.I. stockroom carries a sufficient number of electronic parts to insure an abundant supply for all students at all times.

Training is unusually thorough. In the spacious radio fundamentals laboratory, beginning students quickly acquire valuable practical experience coordinated with the basic radio theory and fundamentals they are taught in the classroom. Theory is made palatable and easy to digest with such visual aids as illustrative talks, demonstration equipment, and instructive motion pictures. Important facts are emphasized in a way that makes them easy to grasp and to remember. Television, of course, plays an important part in the training program. A student spends many interesting hours in the television laboratory working with modern television equipment, to acquire and retain a thorough, working knowledge of the subject—a knowledge that will stand him in good stead when television becomes an integral part of the moving picture theatre program.

The home-study trainee covers practically the same ground as the resident student. The fundamentals of radio comprise the basic work, while a choice of either television and advanced television, radio communications, and industrial electronics make up the electives for advanced study. Substitutions are allowed



HOME STUDY CORRESPONDENTS learn by doing, by textbook and by 16mm. instruction films. Top: One of the sets of parts and tools that constitute a Home Laboratory through which the student gains practical knowledge by assembling sets that later form the basis for future trouble shooting and textbook problems. Center: Student uses permanent oscilloscope, multimeter and signal generator to test 6-tube superheterodyne receiver. Bottom: A 16mm. DeVry projector and series of instruction films add visual education.

RESIDENT STUDENTS follow basic procedures. Top: Lecture courses are graphically illustrated through the use of lantern slides and motion pictures, followed by the usual test problems. Bottom: D.T.I. laboratory student operating a modern Image-Orthicon Television Camera. This is the identical type of camera used by some of the nation's largest and best equipped television stations, so that valuable experience is gained of the problems involved in all branches of this new and rapidly growing American industry.

in making up the curriculum so that a high degree of flexibility, desirable in an extension course, is maintained.

Each student of DeForest's Training, Inc., who elects to study at home receives the following major training advantages: (1) clearly written lessons with handy fold-out diagram sheets which enable the student to have the correct illustration constantly beside the text for page after page; (2) actual motion pictures right in his own room through the loan of a 16 mm. projector and many reels of film illustrating important fundamentals. The projector, a De Vry model, has been made available as the result of an affiliation of the DeVry Corporation with DeForest's Training, Inc. A pioneer in visual training, D.T.I. is the only educational institution of its type to supply motion pictures to students in their own homes—no matter where they live; and (3) home laboratory equipment featuring electronic parts to be mounted on individual bases with spring clip terminals, which permit faster experimenting. Each student keeps all of the home laboratory parts sent him and builds a six-tube Superheterodyne receiver and valuable test equipment as part of his experiments.

The home training program usually requires from ten to fifteen months of spare time training to complete, a period which compares favorably with evening and other spare-time college and technical school courses. The D.T.I. training is ideally adapted to spare time effort by the utilization of an unusually effective combination of major home training aids and an up-to-date text, thoroughly modern throughout. Should a home student desire, he may come to D.T.I.'s modern Chicago Laboratory for two weeks of supplementary practical experience on commercial equipment, after the completion of the home portion of his training. This is simply an optional privilege, of course, and unnecessary for completion of the basic work.

Conclusion

As the inevitable hour approaches when television and moving pictures will coalesce to function as closely coordinated team in the presentation of the finest available entertainment to patrons of the theatre, the need for qualified technicians to handle the actual installation, operation, maintenance, and repair of television equipment will become acute. It is then that qualified technical training in the fundamentals of the new electronic science will pay off; and foresighted theatremen, ambitious enough to invest their time and energy in the learning of the new techniques now, will be ready to assume key positions. The thorough ground work now offered by DeForest's Training, Inc., provides a golden opportunity for management and operators who can sense the shape of things to come.

Now **NATIONAL THEATRE SUPPLY** brings you

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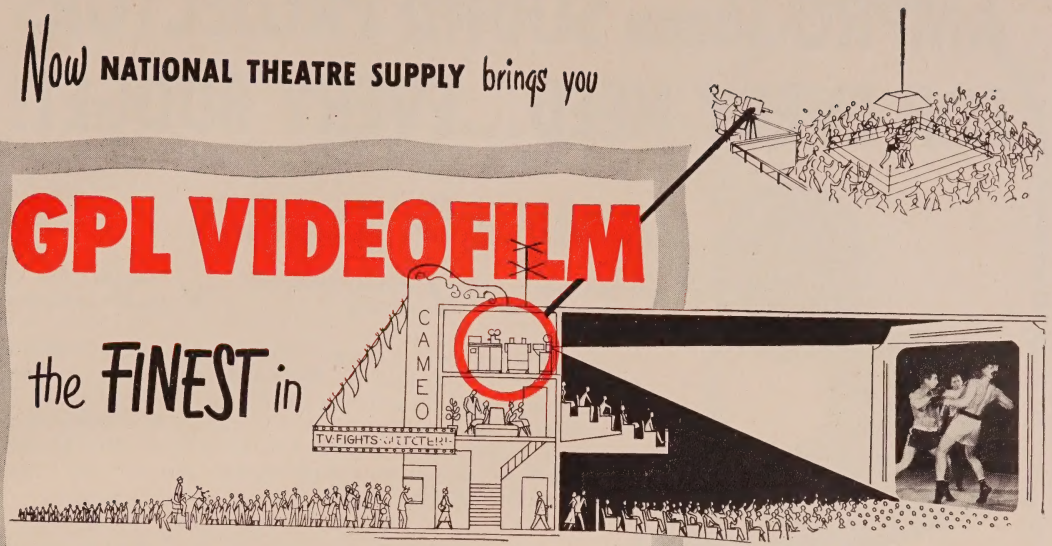

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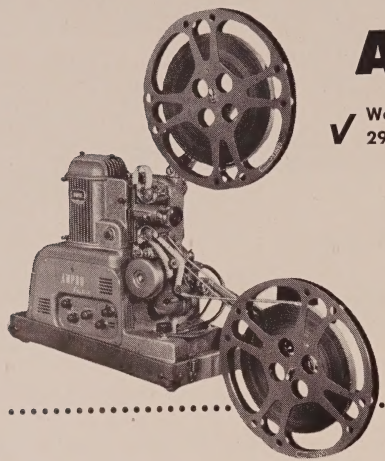

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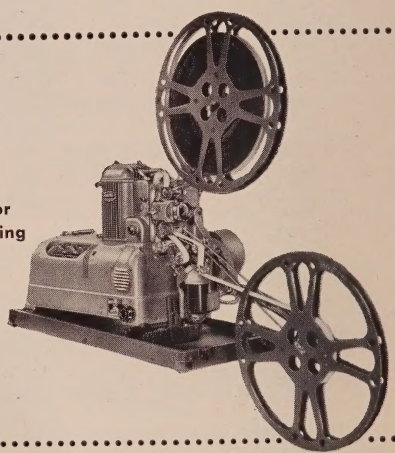

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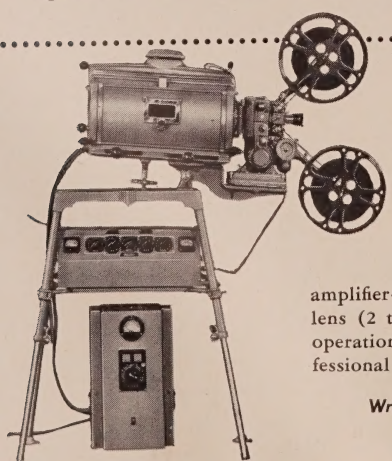

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INDEXES

1950-51

Complete Subject Index to 1950-51 Edition

The Entire Editorial Material is Indexed and Cross-Indexed for Easy Reference Use

A

ACOUSTICS
Absorption coefficient of— 14
Behavior of materials 12
Description of materials 12
Fiberglas board and tile, incombustile 120
Function of materials 12
Paint and— 402
Paintability of materials 15
Reverberation in— 12

ADVERTISING
Balloon-kite unit 361

AIR-CONDITIONING
Care of the fan 353
—condenser maintenance 356
—diffuser 363
Evaporative cooling area considerations 349
Evaporative cooling operational principles 346
Maintenance of the air ducts 353
Maintenance of the belts 353
Maintenance of the compressor 356
Maintenance of the filters 356
Maintenance of the plant 353
Ozone lamp bulb 366
Preventing corrosion in— 351

ASBESTOS, CURTAIN
Size and construction of— 94

B

BOWLING ALLEY
Attendance potential factors of— 434
—operation in theatres 434
Space requirements for— 436
—typical installations with theatres 437

C

CARPET
All-hair underlinings for— 286
Cleaner, low cost 363
Construction analysis of— 285
—installation methods in theatres 287
—installation on concrete floors 115
—layout for stairs 287
Pointers to insure long wear of— 285
Sponge rubber underlining for— 286
Spot removal kit for— 363
—underlining yardage figuring 288

CASH CONTROL
Admission systems, new 365
Counterfeit bill detector 366
Protective agency services in— 415
Theft protection suggestions for— 414
Ticket manipulation and— 414

CLEANING AND SANITATION
—equipment for drive-ins 242
—of the water cooler 280
—water systems for drive-ins 361

CONFECTION VENDING
Cafeteria systems for drive-in— 226
Choice selling items in drive-in 229
Drive-In equipment costs for— 227
Drive-In payroll expenses for— 228
—equipment for drive-ins 243
—in bowling alleys 434
Size of drive-in facilities 229
Station systems in drive-in— 223

CONSTRUCTION
—bowling alleys with theatres 434
Carver Theatre, New Orleans— 102
Concrete floors, detailed study of— 106
Costs of bowling alley— 437
Fiberglas board and tile installation 121
Great Lakes Hospital Theatre— 99
How to keep walls and floors dry 117
Lamella timber roof— 89
Martin prefab drive-in plan— 174
Mirrors, flexible sheet 362
1950-51 Review of new— 16
Waterproofing compounds for masonry and cement— 117

CROWD CONTROL
An efficient theatre system for— 258

D

DECORATION
Acoustics and painting— 402
Black light— 4
Choice of materials for— 9
Color modeling with light for— 3
Compatible color groupings in— 11
Edge-lighting for— 3
Floor coverings in— 9
Illusions of size through— 5
Interior beauty through— 6
Inviting tones in rest rooms— 6
Lighting—smooth tones of color in— 2
Mood and atmosphere with color— 5
—of auditorium 6
Outside glamour with— 6
Paint, varnish and lacquer review for— 391
Restful shades in lounge— 6
Spray painting usage in— 401

DEPRECIATION SCHEDULES
Recommendations for drive-in— 135

DESIGN
All negro theatre— 102
An efficient crowd control system— 258
Black light— 4
Bowling alleys with theatre— 434
Cinerama, a new process in— 321
Color modeling with light— 3
Hospital theatre graduated floor— 99
Hospital theatre seating plan— 99
Illusions of size through— 5
Interior and color coordination in— 5
Lamella timber roof— 89
Lighting, silhouette in— 3
Lighting, some techniques for 2
Merit awards for— 16
Mood and atmosphere with color— 5
1950-51 review of new— 16
Overhead stage structure— 94
Plumbing, structural considerations for— 283

DRIVE-IN THEATRES
Advertising the opening of— 417
All metal display panel for— 360
Audience per car survey of— 128
Automatic traffic control system for— 238
Cafeteria system refreshment vending in— 226
Chair, stadium type, for— 361
Choice confection items for— 229
Confection payroll expenses in— 228
Confection vending equipment costs in— 227
Depreciation recommendations by government 135
Equipment and supplies for— 242
Filter beds in— 172
Four-screen plan for— 178
Frequency of patronage at— 132
Heaters, new, for— 360
Insect screens for— 361
Insurance for— 240
Martin prefab plan for— 174
Mobile outdoor theatre circuit of— 181
Opinion of patrons at— 133

Pagoda, new, for— 361
Portable power units in— 181
Portable traffic signal for— 360
Post and wall exterior lights for— 362
—product perferences of audience 132
—projection and sound servicing 419
—rain visor 361
—ramp circuit checking 420
Recreation areas in— 233
Reopening procedures for— 417
Screen refurbishing for— 420
Second annual audiece survey of— 128
Septic tank systems for— 169
Simple playground areas in— 233
Size of confection vending facilities for— 229
Source of patronage at— 130
—speaker inspection 420
—station system refreshment vending 223
Swimming pool, stainless steel, for— 360
Unusual Fly-In Drive-In 221
U. S. drive-in theatres of the 1951 season 137
Water cooler in— 282
Water systems for— 361

E

EQUIPMENT
Battery, new flashlight, ... 364
Fan, window, ... 363
Incidental, for drive-ins, ... 242

F

FILTER BEDS
—for drive-ins 172

FLOORS, CONCRETE
A detailed study of— 106
Covering— 114
Decorative finishes for— 113
—in interior design 10
Maintenance of— 115

FRONTS
Balloon-kite advertising unit for— 361
Floodlighting the facade 254

I

INSURANCE
More about drive-in— 240

L

LIGHTING, EXTERIOR
Floodlighting the facade 254
Post and wall units for— 362

LIGHTING, INTERIOR
Black light— 4
Examples of— 7
Some techniques for— 2
Spotlights, incandescent 362

LISTS, INDUSTRY
Drive-In theatres of 1951 by addresses 139
Drive-In theatres of 1951 by car capacity 139
Drive-In theatres of 1951 by territories 139
Drive-In theatres of 1951 by ownership 139
Supply dealers of Canada 380
Supply dealers of Rest of World 381
Supply dealers of the U.S.A. 367

LOCKS
Theft protection suggestions for— 414

M

MAINTENANCE
Air-conditioning plant— 353
Carpet cleaner, low cost 363
Cement water paints— 402
Dust control formula for— 364
Equipment for drive-ins— 242
Floor finish, anti-slip, for— 364
—for all types of rubber matting 262
Paint brush— 401
Paint, varnish and lacquer review for— 391
Rubber mat housekeeping for— 260
Sand urn— 365
Shampoo scrubber, upholstery, for— 364
Spot removal kit for— 363
Spray painting for— 401
Stair treads, heavy-duty, for 364

MANAGEMENT
Admission control system in— 365
Bowling alleys with theatres— 434
Burglar and intruder alarm— 366
Counterfeit bill detector— 366
—equipment for drive-in 242
Ozone lamp bulb for— 366
Pest control in theatre— 425
Proper handling of supplies in— 422
Protective agency services for— 415
Purchase order system for supplies and— 422
Reopening the drive-in— 417
Silent paging system for— 366
Sprinkler stopper and— 365
Supply storage and inventory— 423
Television considerations for— 446
Theft protection suggestions in— 414
Types of theatre pests— 425

MATS, RUBBER
All available types of— 261
Installation methods for— 261
Multiple application of— 260
Role of, in theatres 260
Stair treads, heavy-duty, and— 364

MONASTRAL PIGMENTS
Potential uses of— 124

N

NEW INTRODUCTIONS
Admission control system 365
Auto screens, slip on for drive-ins 361
Balloon-kite advertising unit 361
Battery, new flashight, ... 364
Burglar and intruder alarm 366
Carpet cleaner, low cost, ... 363
Carbon burner, continuous, ... 362
Chairs, stadium type, ... 361
Counterfeit bill detector 366
Diffuser, evaporative cooling 363
Drive-In display panel 360
Dust control formula 364
Fan, window, ... 363
Floor finish, anti-slip, ... 364
Heater for drive-ins 360
Mirror, flexible sheet, ... 362
Ozone lamp bulb 366
Pagoda for drive-ins 361
Portable traffic signal 360
Post and wall exterior lights 362
Rain visor, drive-in, ... 361
Sand Urn 365
Set-screw wire connector 365
Shampoo scrubber, upholstery 364
Silent paging system 366
Spot removal kit 363
Spotlights, incandescent, ... 362
Sprinkler stopper 365
Stair treads, heavy-duty, ... 364
Swimming pool, stainless steel, ... 360
Water system, compact, ... 361

P

PAINTING
Acoustics and— 402
Acoustic materials paintability 15
Cement water— 402
Concrete floor finish— 114
—of acoustic materials 15
Paint brush care in— 401
Paint, varnish and lacquer review 391
Spray method of— 401

PEST CONTROL
Remedial treatments for— 425

PICTORIAL SURVEYS, DRIVE-IN
Atlantic, Pleasantville, N. J. 188
Caro, Caro, Mich. 204
Centralia, Centralia, Ill. 208
Colonial, Thibodaux, La. 219
Colonial, Nashville, Tenn. 217
Cowtown, Ft. Worth, Texas 190
Eatontown, Eatontown, N. J. 202

Family, Espy, Pa. 220
Fly-In Drive-In, Belmar, N. J. 221
Geneva, San Francisco, Calif. 206
Hillcrest, Canton, Ill. 216
Jefferson, Dallas, Texas 218
Keno Family, Kenosha, Wisc. 196
Little Dixie Airway, Mexico, Mo. 194
Lost River, Bowling Green, Ky. 212
Marlow Mobil-In Portable Theatres 181
Martin prefab circuit 174
Pyramid, Beaumont, Texas 198
Riverview, Carollton, Ky. 192
Sequoia, Visalia, Calif. 200
Sunset, Woodland, Calif. 214
Terrytime, Woodward, Okla. 210
Twin, Louisville, Ky. 185

PICTORIAL SURVEYS, NEW ROOFED

Alex, Alexandria, Ind. 79
Beach, Cape May, N. J. 51
Brook, Brooklyn, N. Y. 60
Capitan, Pasadena, Texas 24
Capitole, Beyrouth, Lebanon 85
Carib, Miami Beach, Fla. 17
Carver, New Orleans, La. 102
Century's Shore, Huntington, L. I., N. Y. 48
Chapultepec, Mexico, D. F. 86
Crest, Great Bend, Kansas 66
El Rancho, Victorville, Calif. 42
Fiske, Oak Grove, La. 62
Fox, Missoula, Mont. 64
Garmar, Montebello, Calif. 44
Guyan, Logan, W. Va. 37
Haven, Brookhaven, Miss. 40
Hiland, Albuquerque, N. M. 76
Holiday, Park Forest, Ill. 54
Mars, Mars, Pa. 80
Merben, Phila., Pa. 34
Nacional, Mexico, D. F. 87
New Mayfair, Phila., Pa. 78
Northwood, Baltimore, Md. 21
Paradise, Los Angeles, Calif. 69
Paramount, Lethbridge, Alberta, Canada 58
Park, Park Falls, Wisc. 72
Plaza, Washington, D. C. 56
Rapids, Eaton Rapids, Mich. 74
Regent, Algiers, Algeria 84
Reule, Medina, N. D. 81
Sparta, Sparta, N. J. 82
Star, Cebu, Philippine Islands 88
State, Cuyahoga Falls, Ohio 30
Texas, Kingsville, Texas 32
Tuscumbian, Tuscumbia, Ala. 46
Watts, Osage, Iowa 26
Westover, Richmond, Va. 28
Zoe, Pittsfield, Ill. 83

PLAYGROUND

—areas in drive-in theatres 233
Decoration and equipment of— 233
Mechanized rides in drive-in 235
Operating policies in drive-in 234
Supervsion in— 234
Swimming pool, stainless steel, for 360

PREFABRICATION

Lamella Timber Roof— 89

PROJECTION

Cinerama, a new process of— 321
Equipment for drive-in— 243

PROJECTION, LIGHT

Carbon burner, continuous, in— 362
Choosing the proper type and size arc for— 318
Factors in realism of— 318
Light absorbing devices for— 320
Opening procedures for drive-in— 419
Television training program for— 450
Types of projection lamps used in— 318

PROJECTION, 16 mm.

Theatre television use of— 446

S

SAFES

Theft protection suggestions and— 414

SAFETY

Accident prevention with rubber mats 260
Equipment for drive-in— 242

SEATING

Selecting upholstery fabrics for— 276

SEPTIC TANKS

Construction and design of— 169
Location of— 169
Maintenance of— 171
Operation of— 169
Systems for drive-in— 169

SOUND

Cinerama, a new process in— 321
Equipment for drive-in— 243
Opening procedures for drive-in— 419

STAGE

Asbestos curtain height for— 94
Gridiron for— 94
Overhead structure requirements for— 94
Sight lines in relation to— 94
Spotlights, incandescent, for— 362
Underhang type of— 98
Ventilators for— 98

SUPPLIES

Incidental equipment and— 242
Proper handling of— 422

SUPPLY DEALERS

—of the Dominion of Canada 380
—of the Rest of the World 381
—of the United States 367

SURVEYS, AUDIENCE

Traits of drive-in patronage 128

T

TELEVISION

Film intermediate system of— 446
G. P. L. theatre system of— 446
Home study course for— 450
Training program for— 450

TILES, FLOOR

—in interior design 10
—installation on concrete 115

TOILET ROOMS

Drainage and sewers for— 282
Equipment for drive-in— 242
Fixtures for— 284
Structural considerations for— 283
Ventilation of— 284

TRAFFIC CONTROL

Automatic system of, for drive-ins, ... 238

U

UPHOLSTERING

Imitation leathers, analysis of, for— 277
Pile fabrics, analysis of, for— 276
Selecting fabrics for chair— 276
Shampoo scrubber for— 364
Spot removal kit for— 363

V

VENTILATION

—of toilet rooms 284

VENTILATORS, STAGE

Construction of— 98

W

WATER COOLERS

Public service of— 280
Sanitary features of— 280
Special attachments and sizes of— 281

WATERPROOFING

How to keep walls and floors dry with— 117

WIRING

Set screw connector for— 365

Cumulative Index to All Previous Editions

Topical References to All Articles Published in Prior Volumes of Theatre Catalog

SPECIAL NOTE

All entries are given by edition number and, following the colon, the page on which starts the article containing the indicated information.

The dates of the several editions are as follows:

2nd Edition	1941
3rd Edition	1942
4th Edition	1945
5th Edition	1946-47
6th Edition	1947-48
7th Edition	1948-49
8th Edition	1949-50

A

ACOUSTICS
- Absorption of sound ... 6:145
- Audibility and ... 6:244
- Construction of ... 6:144
- Decorative aspects of ... 2:154
- Design for ... 6:144
- Effect of painting on ... 5:224
- Fabric uses in ... 4:209; 6:145
- Fiberglas and ... 5:232; 6:160
- Materials for ... 6:250
- Noise elimination and ... 6:245
- Noise level and ... 6:244
- Planning of ... 3:192
- Principles of ... 4:152; 6:244, 249
- Reverberation and ... 6:247, 249
- Sound distribution in ... 6:246
- Sound transmission and ... 6:244
- Space and ... 7:324
- Studio design and ... 5:539
- Theatre requirements of ... 2:246

ADVERTISING
- Basic appeals in ... 2:297
- Drive-In Methods in ... 8:303
- Exploitation through ... 2:292; 3:287; 7:494
- Forms for record on ... 6:502
- Hints on preparing ... 6:487; 8:303
- Intra-theatre displays and ... 4:430
- Introducing a New Theatre ... 7:490
- Introducing a Drive-In ... 8:303
- Layouts for ... 3:287
- Outdoor stands and ... 4:440; 8:303
- Outsize displays and ... 4:435
- "Selling" Your Theatre ... 7:494
- Sign Letter Typography ... 2:176
- Trailers and ... 5:442

AIR CONDITIONING
- Automatic controls in ... 5:378
- Capacity requirements of ... 8:430
- Centralized systems for ... 6:390
- Comfort and ... 5:368; 6:403
- Compressors, freon ... 6:399
- Corrosion control in ... 5:382
- Dampers in ... 8:430
- Diffusers ... 7:444
- Distribution Problems ... 7:438
- Draft control in ... 4:372
- Dry-bulb temperatures, U.S.A. ... 6:396
- Electronic air filters in ... 3:325; 6:404
- Evaporative condensers for ... 8:430
- Freon for ... 6:398; 7:442
- Heat pumps in ... 5:372; 6:416
- Heating in relation to ... 8:430
- Humidity control in ... 6:401
- Maintenance of ... 2:328; 3:319, 331; 4:379; 5:389
- Medical angles of ... 2:316
- National theatre survey on ... 8:484
- Operational standards in ... 2:317; 8:430
- Packaged systems ... 6:390, 395
- Plan and design of ... 2:317
- Practical observations on ... 8:430
- Refrigeration in ... 6:398
- Remodeling and ... 7:165
- Reverse-cycle units in ... 5:372
- Solar heating and ... 6:411, 412
- Sterilization with Glycol ... 7:436
- Thermal insulation for ... 5:386, 387
- Types of systems in ... 2:330; 8:430
- Unit systems ... 6:390, 395
- Well water system ... 8:430
- Wet-bulb temperatures, U.S.A. ... 6:396

AIR STERILIZATION
- Duct use of lamps in ... 4:495
- Fixtured use of lamps in ... 4:491; 5:496
- Glycol Vapor in ... 7:436
- Technical details of ... 4:486; 5:496

AISLES
- Construction of ... 6:144
- Light Wiring ... 7: 49

ALARMS, EXIT DOORS
- Design and construction ... 6:141

APPRAISAL
- Factors in modern ... 8:492

ARCHITECTS
- 1949-50 Index to ... 8:153
- Works of John and Drew Eberson ... 7: 1
- Works of S. Charles Lee ... 8: 1

B

BILLIARDS
- Installation ... 6:522
- Lounge—refreshment area ... 6:522
- Theatre tie-ins with ... 6:520
- Typical theatre layouts ... 6:520, 521

BLACK LIGHT
- Decorative uses of ... 4:216; 5:220; 7:316
- Theatre uses of ... 3: 12

BOOKKEEPING
- Cost Analysis ... 7:500
- Depreciation Schedules ... 7:503
- Management systems ... 2:286; 3:267; 4:446

BOOTHS, PROJECTION (See PROJECTION ROOMS)
BOOTHS, TICKET (See BOXOFFICES)
BOX OFFICES
- Aluminum uses in ... 6:163
- Comfort and Safety ... 7: 62
- Design of ... 5:191
- Drive-In boxoffices (See DRIVE-IN)
- Location of ... 2:182

BULBS, LAMPS (See LAMPS, INCANDESCENT)

C

CANDY STANDS (See CONFECTION STANDS)
CARBON-ARC (See LAMPS, CARBON-ARC)
CARPETS
- Axminster ... 6:265
- Backing and quality ... 6:264
- Burns repair in ... 6:266
- Chenille ... 6:276
- Color coordination in ... 6:261
- Cushions for ... 3:169
- Daily care for ... 6:267
- Decorative use of ... 3:165
- Depressions ... 6:144
- Installation of ... 3:173
- Maintenance of ... 2:140; 3:296; 4:224; 6:263, 265, 266
- National theatre survey on ... 8:484
- Spot removal ... 6:266
- Tapestry ... 6:265
- Trends in design and use of ... 4:221
- Velvet ... 6:266
- Wilton ... 6:263

CARPET CUSHIONS
- General discussion of ... 3:169

CASES, DISPLAY
- Design of ... 5:191

CASH CONTROL
- Boxoffice safes ... 5:460
- Drive-in ... 7:227
- Safes ... 5:458
- Systems for ... 3:272
- Tickets ... 3:272
- Tube transportation ... 6:432

CENTERS, AMUSEMENT
- 5-phase project ... 6:517
- Higher admissions in ... 8: 48

CENTERS, COMMUNITY
- Navy Point, Florida ... 5:174

CENTERS, RADIO
- Radiocentro, Havana ... 5: 11

CENTERS, SHOPPING
- Entering an era of ... 8: 50

CHECK ROOM
- Comfort and Safety ... 7: 63

CODES, BUILDING (See CONSTRUCTION)
COMFORT
- Essentials of ... 2:169; 5:368
- Humidity and ... 6:401
- Safety of the Audience ... 7: 61

CONFECTION STANDS
- Attendant's uniform for ... 8:506
- Beverage Bars ... 6:551; 8:487
- Beverage bottle service ... 6:522, 548
- Candy in ... 2:270; 6:518
- Candy-counter operations in ... 2:277
- Circuit Operation ... 7:519
- Cup vending ... 6:546, 549, 550
- Dual-flavor units ... 6:546
- Earnings, how to get ... 8:502
- Front selling at ... 8:504
- Frozen food in ... 4:526
- Ice cream in theatres ... 6:518
- Inventory Forms ... 7:521
- Location of ... 8:503
- Maintenance of equipment in ... 4:522
- Merchandise handled by ... 8:488
- Miami Theatre layout ... 6:519
- National theatre survey of ... 8:486
- Popcorn in ... 2:270; 4:522; 6:536; 8:487
- Popcorn seasoning ... 5:515
- Sales prices at ... 8:488
- Sanitation codes ... 5:514
- Sources of supply ... 8:488
- Theatre Problems in ... 7:516; 8:502
- Types and locations ... 8:486
- Vending machines in ... 2:270

CONSTRUCTION
- Acoustical ... 6:144
- Aisles ... 6:144
- Aluminum in ... 6:166; 8:175
- Attic ... 6:155
- Auditorium ... 6:139
- Awards for "Perfect 36" in ... 3: 9
- Boiler Room ... 6:154
- Boxoffice ... 6:133
- Building codes and ordinances on ... 2:21; 6:16; 8: 54
- Building standards in ... 2: 17
- Ceiling ... 6:140
- Cement and concrete in ... 4:154
- Copper used in ... 4:140
- Doors ... 6:136
- Drive-Ins (See DRIVE-IN THEATRES)
- Drying of paint and plaster in ... 8:187
- Dual-auditorium theatres ... 3: 17

Economic fundamentals of 4: 8
Economies possible in 3:141
Electric control room 6:154
Entrances 6:130, 134
Escalators in 8:363
Film exchanges 6:156
Fronts 4:179
General factors in 6:129
Glass in 7:282
"Home in a theatre" 4:461
Ladies rooms 6:150
Lead used in 4:141
Lobby 6:136
Marble selection for 8:178
Magnesium used in 4:144
Manager's office 6:154
Men's rooms 6:151
Metals used in 4:131
Mexico 4:168
Mezzanine 6:147
Miller, Lewistown, Pa. study 8:170
Minimum requirements of 8:490
Plastics used in 4:152
Porcelain enamel used in 4:174
Pre-fabrication and 4:122, 128
———, all-steel, and 4:118; 7: 50
———, alumidrome 6:166; 8:175
———, plastic-plywood, and 4:125; 7:137
Progressive execution of 3:298
Projection room 6:149
Proscenium opening 6:148
Quonsets and 5:145; 6:19, 22, 24, 29; 7:50, 185
Review of 5: 33
Roof gardens 4:460
Sight lines and 3:153
Speed drying to rush 8:187
Standee foyer 6:137
Study of Miller, Lewistown, Pa. 8:170
Vermiculite and 5:169
Wood utilization in 4: 4; 7:137

CORROSION
Control of 5:382

COST ANALYSIS
Budget Fundamentals 7:500

CROWD CONTROL
Handling of crowds 5:502

CURTAIN CONTROL
Wiring 7: 49

D

DECORATION
Acoustic materials in 2:154
Acrylic plastics in 6:253
Black light and 3:12; 4:216; 5:220; 7:316
Carpets used in 3:165
Cement and concrete in 4:154
Chemists' developments in 4:150
Circlarc Lamps in 6:310
Color and 2:122; 3:188; 4:109
Construction and 6:145
Copper used in 4:140
Design and Color 7:319
Dimmers in 7:330
Drying speed of 8:187
Fabrics used in 2:131; 4:209
Fiberglas used in 5:232; 6:161
Glamour and 4:208
Glass in 7:282
Lead used in 4:141
Metals used in 4:131
Painting with light 6:253
Plastics used in 4:152
Plastic Wall Paneling in 7:299
Plexiglas used in 4:147; 6:253

DEPRECIATION
Drive-In theatre 8:288
Equipment rates 2:265; 7:503

DESIGN
Acoustics and 2:152; 3:192; 6:144
Adaptation of, to locale 2:10; 4: 2
Air conditioning plan 2:317
Aisles 6:144
Alumidrome 6:166; 8:175
Architects, 1949-50 index to 8:153
Art-cinemas 6:509
Attic 6:155
Auditorium 6:139; 8:354
Boiler room 6:154
Boxoffice 5:191; 6:133
Boxoffice location 2:181
Candy stands 5:510
Capacity computation in 6:129
Carpet trends in 4:221
Ceiling 6:140
Centers, amusement 6:517; 8: 48
Centers, community 5:174
Centers, radio 5: 11
Centers, shopping 8: 50
Color and 4:109
Comfort and Safety Rules 7: 61
Computation of capacity in 6:129
Display cases and 5:191
Drive-Ins (See DRIVE-IN THEATRES)
Dual auditorium 3: 17
Entrances 6:130
Escalators for balconies 8:363
Film exchanges 6:156
Fronts 3:199; 4:179
Functionalism in 2:22; 6: 6
Future aspects of 2:12; 6:7; 8: 47
"Home in a theatre" 4:461
Index to Theatre Designers 8:153
Interesting Canadian Theatre 7: 34
Interesting Latin-Amer. Theatre 7: 43
Ladies' rooms 6:150
Lighting, interior 4:218
Lobby 6:136
Maintenance angles in 2: 20
Manager's office 6:154
Marble uses in 8:178
Men's rooms 6:151
Mexican theatres 4:168
Mezzanine 6:147
Never-Swept Theatre 7: 47
Pre-fabrication and 4:4, 118, 125; 6:166; 7:50, 137; 8:175
Problems in 5: 2
Projection room 2:202; 3:260; 4:326; 6:149
Proscenium opening 6:148
Requirements for future 8: 47
Roof gardens in 4:460
Seating 4:226; 8:354
Sight lines in 3:153; 8:354
Signs 2:194
Stadium plan 6:146
Stages 4:229; 5:237
Standee foyer 6:137
Studio acoustic 5:539
Theatres in airplanes 5:554
Theatres in ships 5:471
Theatres in trains 5:471
Toilet plan 4:278
Trans-Lux advantages 4:468
Visual comfort 8:354

DISPLAYS
Aluminum used in 6:163
Cases and frame design 5:191; 6:134, 136
Intra-theatre advertising 4:430
Oversize advertising 4:435

DRIVE-IN THEATRES
Admission Tax Rulings 8:292
Advertising Stunts 8:302, 303
Audience potential for 8:196
Background Data on 7:221
Better construction of 8:233
Blacktop methods 8:316
Boxoffice needs in 6:186; 7:258
Cash Control in 7:227
Concession stands 6:187; 7:257; 8:312
Confection sales intercom 8:294
Daylight showings in 8:297
Depreciation for tax 8:288
Design and construction 3:145; 4:471; 6:180; 7:255 8:201, 237
Drainage in 6:183
Drive-Over and Drop-In 4:105
Equipment needs in 6:189
Electrical Installation for 7:258
Entertainment preferences in 8:199
Fence needs in 6:189
Fencing with Billboards 7:236
Grading Problems 7:256; 8:315
Home In a 7:222
Ideal layout for 6:180; 8:237
Insect Control in 7:237
Insecticides for Use In 7:238
Insurance requirements for 8:290
Intercom Confection Sales 8:294
Landscape needs for 6:188; 8:275
Layout Planning 8:237
Legal Decisions re. 8:242
Legal Position of Patents 8:165
Lighting Ramp Areas 7:259
Maintenance Procedures for 8:283
Management methods 4:471; 5:470; 8:248, 310
Man-made Moonlight 7:259
Monkey villages in 8:300
New Designs of 1949-50 ..... 8:201
Nurserymen of the U. S. 8:276
Oil dressing methods 8:316
Operating procedures 2:15; 8:248, 310
Ordinances covering 6:182; 8:242
Patents, design 8:165
Patrons, who are the 8:196
Plants suitable for 8:275
Projection buildings 6:187; 7:257
Screen towers 6:185; 7:242, 257, 265; 8:297
Seasonal Closing Rules 7:231
Segregation Problem in 8:236
Showmanship in 8:233
Sign needs of 6:185
Site Selection 7:255; 8:237
Size calculation 8:237
Smaller community theatres 8:235
Speaker Design 7:243
Surfacing of 6:184; 8:315
Survey of Audience potential 8:196
Survey of Structure and Practice 8:248
Tax Rulings 8:292
Test Borings for 7:257
Theatres of Today and Tomorrow 8:233
Tips on good management 8:310
Toll Systems for 7:263
Topographical Plans for 7:251; 8:237
U. S. Theatres during 1949 ..... 7:198
U. S. Theatres during 1950 ..... 8:253
Underground Cables for 7:249
Weed Control in 8:313
Zoning regulations 8:242

E

ELECTRIC
Notes on Wiring 7: 48

EMERGENCY
Exit Doors 6:141
Fire 4:232, 505, 540
First Aid 4:509
Holdup safeguards 5:461
Lighting 5:482
Power Equipment 7:337

EQUIPMENT
Check List of 7:168
Chemists' developments in 4:150
Conservation of 3:278a
Depreciation rates of 2:265; 7:503
Maintenance of 3:278a; 4:379
Minimum recommendations 8:491
Projection 3:243, 260
Remodeling and 7:167
Sound 4:313
Television 5:534; 8:512
Toilet 4:278

EXHIBITION
Children's shows in 5:476
Cost Analysis 7:500
Depreciation Schedules 7:503
Itinerant booths in 4:129

EXPLOITATION
Advertising and 2:292; 3:287; 8:303
Construction 6:478
Hearing aids in 6:348
House organs and 6:486
Local news reels 5:564, 568
Posters in 4:433; 8:303
Trailers in 2:292; 5:442

F

FABRICS
Acoustic effect of 4:209; 6:145
Construction with 6:146
Decoration and 2:131; 4:209
Fiberglas 4:112; 5:232; 6:160
Progress in 4:211
Theatre individuality and 2:211
Upholstering and 3:149

FINANCING
RFC procedures in 2: 13

FIRE
Duties of personnel in 4:540
Fighting of 4:232

Sprinkler protection 6:429
Tragedy prevention in 4:505
Types of 4:232

FIRE EXTINGUISHERS
Locations for 3:276; 4:232; 5:483
Maintenance of 3:276; 4:232; 5:483
Types of hand-operated 4:232; 5:483

FIRST AID
Refresher course on 4:509

FLOORS, HARD-SURFACE
Asphalt tile 6:208
Maintenance of 4:184

FLOOR SLOPES
Curves 6:143
Elevation 6:142
Sightlines and seating 2:118; 3:153; 6:140

FRONTS
Aluminum used in 6:163; 8:175
Design of 3:199; 4:179; 6: 8
Glass used in 2:178
Plastics used in 2:178
Porcelain enamel in 2:178; 4:174
Remodeling of 6:206; 8:339

G

GENERATORS
Brush care 7:472
Discussion of 4:288

GLASS
Theatre fronts 2:178

H

HAND DRIERS
Acceptance of 8:446
For lavatories 5:282; 8:446

HEARING AIDS
Developments in 8:473
Induction system 6:349
Potential revenue from 6:347

HEATING
Gas Turbine method of 6:414
Maintenance of 5:392; 8:430
Powder-fine coal system 6:414
Practical observations on 8:430
Radiant heat discussion 4:375
Remodeling and 7:164
Solar principle in 6:411, 412
Summer care of 5:392

HEAT PUMPS
Air conditioning with 5:372

HOLDUPS
Safeguards against 5:461

I

INSECTICIDES
Drive-in 7:238
Kinds and uses of 4:498

INSULATION, SOUND
Fiberglas in 4:112
Vermiculite for 6:171

INSULATION, THERMAL
Air conditioning and 5:386
Mineral wool in 6:168
Roof treatment for 5:387
Types of 6:168

INSURANCE
Drive-Ins 8:290
Types of coverage by 4:444

INVENTORY CONTROL
Forms for 6:492
Item identification in 6:491
Repair shop reports in 6:492
Warehouse reports in 6:492

L

LAMPS, CARBON-ARC
Air-cooled arc tests 8:392
Arc stabilization method in 6:339
Ashcraft C-70 ..... 6:338
Carbon Cooling effects 8:401
Electronic-control 5:286; 7:400
Gaumont-Kalee 21 ..... 6:332
High-intensity Lamp 7:393
High-intensity Light in 7:390
Low-intensity types of 3:247
Motiograph-Hall 7:398
Operation of 2:223
Performance, optimum of 8:392
Requirements for 3:219; 4:285
Terminology for 3:231
Water-cooled arc tests 8:392

LAMPS, CIRCLARC
D.C. operation 6:311
Wiring diagram 6:310

LAMPS, CONCENTRATED-ARC
Description of 5:289

LAMPS, INCANDESCENT
Bulb maintenance 5:187
Storage 6:154

LAMPS, STERILIZATION
Duct use of air 4:495
Fixtured use of air 4:491; 5:496
Ultraviolet sanitation 4:486, 491, 495; 5:496

LAVATORIES
Comfort and Safety 7: 64
Hand driers in 5:282; 8:446
Plastic Wall Paneling 7:299
Sanitation Practices 7:506
Sanitation Service 7:509

LAWSUITS
Drive-In 8:242
Suggestions for avoiding 2:297

LENS COATING
Developments and history of 4:299

LENSES, PROJECTION
Low-reflection films for 4:299
Orthoscope auxiliary system for 4:293
Screen results with 2:241

LIGHTING, EMERGENCY
Discussion of 5:482

LIGHTING, EXTERIOR
Indirect systems for 3: 19
Modernization with 5: 7
Sign 6:131
Sign Wiring 7: 48

LIGHTING, INTERIOR
Circlarcs in 6:310
Dimmer Methods 7:330
Emergency Equipment 7:337
Indirect systems for 3: 19
Modernization with 5: 7
Panel Board Wiring 7: 48
Planning for 4:218
Rest room 6:151
Suggestions 7:327

LIGHTING, PROJECTION
(See PROJECTION LIGHTING)

LIGHTING, SIGN
Cold-cathode in 5:178

LOBBY
Ceiling construction 6:136
Comfort and Safety 7: 63
Rubber mat uses 4:182

LOBBY FRAMES (See CASES, DISPLAY)
LOUNGE
Comfort and Safety 7: 63

M

MAINTENANCE
Air conditioning 2:328; 3:319, 331; 4:379; 5:389; 8:430
Carpets 2:140; 3:296; 4:224; 6:263, 265
Construction notes on 6:132
Equipment 3:278a; 4:379
Hard surface floors 4:184
Heating 5:392; 8:430
Marble 8:183
Never-Swept Theatre 7: 47
Plumbing fixture 6:320
Procedures in 2:290
Projection equipment 2:226; 5:323
Rubber mats 3:216; 5:194
Sanitation Practices 7:506
Signs 4:177; 5:187
Sound 2:210; 5:123
Theatre preservation through 5:435
Vacuum systems 6:428; 7:346

MANAGEMENT
Art-cinemas 6:508
Bookkeeping system for 2:286
Cash controls for 3:272
Children's shows 5:476
Clearance calendar for 2:284
Confection stand 8:502
Discussion of 2:278
Drive-In theatres and 4:471; 5:470; 8:248, 310
Forms and systems for 3:267; 4:446
Hearing aids in 6:348; 8:473
Insurance program for 4:444
Popcorn and 4:522
Service companies and 4:420, 428
16mm combination policy 6:572
Trailers in 5:442
Trans-Lux theatres and 4:468
Wholesale buying for 2:298

MARBLE
Its Selection 8:178
Its Maintenance 8:183

MARQUEE
Animation thru trailers on the 8:330
Design of 2:194
Lighting 6:131
Poblocki "Inner-Service" 7:290
Trailers on the 8:330

MODERNIZATION (See REMODELING)

N

NEWSREELS, HOME-MADE
Cooperative plan for 5:564
Experiences with 5:568

P

PAINTING
Effect on acoustics 5:224
Speed-Drying of 8:187

PARKING
Barriers for 6:499
Claims checks in 6:499
Downtown problems 8: 48
800-car lot for 5: 30
National theatre survey on 8:485
Off-street facilities for 5: 14
Space needs of cars 6:498
Zoning on 6:497

PERSONNEL
Confection attendants uniform 8:506
Drive-In rules for 8:310
Fire training 4:540
Hand signals for 2:167
Home-study course for 4:536
Manager training 5:529
On-job training course for 4:539
Operator's training course 5:572
Patron expectations of 2: 64
Rules of conduct for 2:262
Sanitation Course 7:506
Standee management by 2:266
Work of managers 5:522

PESTS (INSECT)
(See INSECTICIDES)

PLASTER
Speed-Drying of 8:187

PRINTS, 16-mm.
Prolonging service life of 5:570

PROJECTION
Carbon monoxide gas in 6:352
Cyanide gas in 6:352
Equipment for 4:304
Fault correction in 5:302
Standards for 2:228

PROJECTION, 16-mm.
(See 16mm.)

PROJECTION LIGHTING
Carbons in 5:313
Concentrated arc lamps 5:289
Cooling effects on 8:401
Electronic control lamps 5:286
High-intensity lamps 7:390, 393, 398
Low-intensity lamps 3:247
Operation of lamps 2:223
Performance of arcs 8:392
Requirements for 4:285
Terminology for 3:231

(continued)

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FOR DETAILED PREVIOUSLY PUBLISHED CONTENTS — SEE PAGE 459 OF THIS VOLUME

PROJECTION OPTICS (See LENSES, PROJECTION)

PROJECTION ROOMS
- Design and plans for ... 2:202; 4:326; 6:149
- Dual equipped ... 8:517
- Equipment for ... 3:243, 260
- Hazards in ... 5:328
- Itinerant exhibition ... 4:329
- Location of ... 3:260
- Telephone in ... 6:149

PROJECTORS
- Ballantyne Model R ... 7:402
- DeVry 12000 series ... 6:329
- Gaumont-Kalee ... 6:332
- Maintenance of ... 2:226; 5:323
- Motiograph Model AA ... 5:293
- Portable 35 mm. ... 7:409
- RCA No. 60 ... 7:405
- Service for ... 4:420
- Simplex X-L ... 8:396
- Survey of ... 4:304

PROJECTORS, 16-mm.
- Developments in ... 5:550
- Discussion of ... 5:550
- Dual-equipped screening room ... 8:517
- Trends in ... 5:550

Q

QUONSET
- Construction with 5:145; 6:19, 22, 24, 29, 31; 7:50, 185

R

RECTIFIERS
- Copper oxide ... 4:291; 5:306
- Magnesium-copper sulphide ... 5:308
- Selenium ... 5:309
- Tube type ... 6:341

REFLECTORS
- Manufacture of ... 4:293

REMODELING
- Auditorium ... 7:161
- Balcony ... 7:163
- Building Codes in ... 7:154
- Business-boosting through ... 2:281
- Examples of ... 7:169
- Front ... 7:155
- Lobby ... 7:158
- Methods in ... 3:180
- Modernizing with light ... 5: 7
- New Theatre, Baltimore ... 5:129
- Obsolescent auditoriums and ... 4:157
- Practices in ... 7:154
- Rest Room ... 7:159
- Wiring and ... 7:166

REST ROOMS
- Appeal value of ... 2:124

ROOFS
- Asbestos Coating ... 7:146
- Construction of ... 4:166
- Essentials of Waterproof ... 7:146
- Inspections in Remodeling ... 7:154
- Thermal insulation ... 5:387

RUBBER MATS
- Care and maintenance of ... 3:216; 5:194
- Installation of ... 3:177
- Lobby uses of ... 4:182

S

SAFES
- Discussion of ... 5:458

SAFES, BOX-OFFICE
- Discussion of ... 5:460

SAFETY
- Comfort and ... 7: 61
- Underwriters' film standards ... 5:489

SANITATION
- Codes and, in theatre vending ... 5:514
- Glycol Vapor ... 7:436
- Hand driers and ... 5:282; 8:446
- Practices ... 7:506
- Ultraviolet light and ... 4:486, 491, 495; 5:496
- Vacuum Cleaning in ... 7:346

SCREENING ROOM
- Dual equipped ... 8:517

SCREENS
- Projection lenses and ... 2:241
- Retiscope (Nu-Screen) ... 4:284

SEASONING, POPCORN
- Discussion of ... 5:515
- Types of ... 5:515

SEATING
- Correct ... 7:342; 8:354
- Designs for ... 4:226; 6:142
- Floor Slopes in ... 7:344
- Installation of ... 3:157; 4:226
- National theatre survey on ... 8:485
- Sightlines and ... 2:118; 3:153; 7:343
- Spacing for ... 2:118
- Stagger Seating ... 7:343

SERVICES
- Air-conditioning ... 5:428
- Housekeeping ... 5:428
- Inventory ... 5:428
- Management ... 5:428
- Sound ... 5:434
- Trade-union ... 5:428
- Users of ... 4:420

SIGNS (AND LETTERS)
- Cold cathode in ... 5:178
- Design of ... 2:194; 6:130
- Maintenance of ... 4:177; 5:187
- Review of ... 5:181
- Storage ... 6:132, 154
- Typographic principles for ... 2:176
- Wiring Notes ... 7: 49

SITES FOR THEATRES
- Desirable Locations ... 8: 43
- Social Habits in Relation to ... 8: 43
- ———, in Large Urban Centers ... 8: 44
- ———, in Fringe Areas ... 8: 45
- ———, in Suburban Neighborhoods ... 8: 45
- ———, in Small Towns ... 8: 46

16-MM.
- Business films in ... 5:559
- Carbons, hi-intensity ... 6:570
- Dual-equipped screening room ... 8:517
- Emergency Use of ... 7:534
- Equipment for ... 4:483
- Hospital uses of ... 6:511
- Marcal Theatre, Hollywood ... 5:546
- Operator's training course ... 5:572
- Plastic-plywood construction for ... 4:125
- Potentialities of ... 4:483
- Vehicles for utilizing ... 5:554

SOUND
- Absorption values ... 6:145
- Action of ... 6:246
- Duosonic loudspeakers ... 6:337
- Fault correction in ... 5:320
- Maintenance of ... 2:210; 5:123
- Requirements for hearing ... 6:244
- Service on ... 5:434
- Survey of equipment for ... 4:313

STAGES
- Design of ... 4:229; 5:237; 6:2, 148
- Equipment for ... 4:229; 5:237
- Lighting ... 6:268
- National theatre survey on ... 8:485

STANDS, CANDY (See CONFECTION STANDS)

STUDIOS, BROADCAST
- Acoustic design of ... 5:539
- Station WBAL, Baltimore ... 7: 57

T

TELEPHONES
- Intercom Wiring ... 7: 49

TELEVISION
- Analysis of (1950) ... 8:512
- Boxoffice potentials of ... 8:512
- British experience in, for theatres ... 4:552
- Equipment for ... 5:534; 6:566
- Large Screen ... 7:528
- Motion-picture Industry and ... 4:544, 545, 549, 569; 6:566; 8:512
- Principles of ... 4:563

TICKETS
- Cash-control system with ... 3:272

TOILETS
- Advancements in ... 6:307
- Design and planning of ... 4:278
- Equipment for ... 4:278; 6:318, 319

TRAILERS
- Advertising use of ... 5:442
- Exploitational use of ... 2:292; 5:442
- Marquee use of ... 8:330
- Place of, in management ... 5:442

TRANS-LUX THEATRES
- Equipment for ... 4:468

U

UNDERWRITERS
- Film safety standards ... 5:489

UPHOLSTERY
- Wearing qualities of ... 3:149

V

VACUUM CLEANING
- Theatre Methods in ... 7:346

VENDING MACHINES
- Frozen food ... 4:526

VENTILATION
- Draft control in ... 4:372
- Toilet room ... 6:152

W

WALLPAPER
- Developments in ... 5:276
- Uses of ... 5:276

WATERPROOFING
- Toilet rooms ... 6:152

WIRING
- Fundamentals for Theatre ... 7: 48
- Remodeling and ... 7:166
- Requirements for Blacklight ... 7:317

WORLD THEATRES
- Statistics on Number of ... 8: 38